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Short-Term Energy Supply/Demand Outlook

--Analysis on Scenario through FY2012 –

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<Summary>

【Background】

The March 11 Great East Japan Earthquake affected the Japanese economy by disrupting production facilities and supply chains on the supply side, and dampening consumer sentiment on the demand side. The disaster also triggered electricity supply shortages, prompting the government to resort to an electricity consumption restriction order last summer for the first time in 37 years. It thus imposed constraints on economic and production operations. However, manufacturers took advantage of holiday and nighttime operations to minimize the impact of such constraint on their production operations. The residential and commercial sectors also implemented substantial electricity savings. Japanese people made great efforts to avoid any serious situation and overcome the constraints. Economic and production operations are now recovering on the restoration of production facilities and supply chains and a decline in restraints on consumption. But prospects are dim for restarting nuclear power plants under regular checkups. The problem of electricity shortages still exists, leaving fears to linger about economic and production operations.

Given such conditions, this report presents **forecasts on Japan's energy supply and demand in FY2011 and FY2012**. For FY2012, we have made two scenarios for forecasting energy supply and demand. In "**Case (A): without electricity restriction,"** nuclear power plants will restart from next summer, with electricity problems having no impact on economic activities. In "**Case (B); with electricity restriction,"** no nuclear power plants will restart next summer, with electricity shortages affecting economic activities.

【Case Assumption】

【Case (A): without electricity restriction】

Nuclear power generation will decrease gradually before reaching zero in May 2012. From July, nuclear power generation will be resumed gradually. At the same time, some of the electricity-saving measures implemented in the summer of 2011 will be carried out (to save electricity consumption by 4.3% on a kilowatt basis). Therefore, the electricity supply-demand balance will be kept from tightening, allowing economic activities to remain free from electricity shortages.

【Case (B): with electricity restriction】

Nuclear power generation will decrease gradually before reaching zero in May 2012. No nuclear power plants will be restarted. Next summer, electricity generation capacity (taking 5% reserve margin into account) will be **12.2% short** of maximum demand on a kilowatt basis. Even if electricity-saving measures implemented in the summer of 2011 are carried out realistically (to save electricity consumption by 6.8% on a kilowatt basis), capacity will still be short. Economic and production activities will have to be reduced to eliminate the supply-demand gap. In this case, therefore, economic activities will be scaled down to balance electricity demand with supply.

【Key Conclusion】

(1) Outlook on Key Economic Indicators for FY2011 and FY2012

In FY2011, the Japanese economy substantially shrank on production and supply disruptions caused by the Great East Japan Earthquake before starting recovery in production and exports in summer. The European sovereign debt problem, though still uncertain, is expected to fall short of developing into any serious situation. As the world economy is decelerating due to budget and other problems, however, Japan's export recovery may be limited to a moderate one. Even given reconstruction demand in the disaster-affected region, the Japanese economy may fail to cover its decline in the first half of FY2011 with a gain in the second half. **Japan's FY2011 GDP** is expected to **decline 0.3%** from the previous year **in real terms.** Production has been affected by the earthquake and the termination of subsidies for eco-friendly vehicles and electrical home appliances in the midst of FY2010. Even if production recovery in the second half is taken into account, The Index of Industrial Production for FY2011 is projected to post 1.7% drop from the previous year. Due to the expansion of fossil electricity generation and fossil fuel price hikes, Japan's fossil fuel imports in FY2011 are expected to increase by 4.2 trillion yen (including 2.4 trillion yen for electricity generation) from the previous year to 20.6 trillion yen. Their share of Japan's total imports is estimated to rise to 30.2% (from 26.3% in the previous year), contributing to forcing Japan to plunge into an overall trade deficit

(at 1.4 trillion yen).

(The CIF-based import price for FY2011 is assumed at $112 per barrel for crude oil, $785 per ton for LNG and $142 per ton for steaming coal.)

In "**Case (A): without electricity restriction"** for FY2012, the Japanese economy will see a moderate production expansion on export growth, post-disaster reconstruction demand and an investment recovery. The **Index of Industrial Production** is expected to **rise 5.0%** from the previous year. As a consumer and investor confidence recovery in the private sector occurs in addition to export and public investment growth, **GDP** in FY2012 is projected to **grow 1.9%** from the previous year with both domestic and external demand expanding.

In "**Case (B) :with electricity restriction,"** electricity supply will fall short of satisfying demand even with electricity-saving measures being carried out for the summer of 2011, which will affect economic activities. Particularly, production activities will be affected. The **Index of Industrial Production** is expected to post **a rise of 1.6%** (down 3.4 percentage points from the level for Case (A)) from the previous year. Fossil fuel imports in FY2012 are estimated to expand by 4.6 trillion yen (including 3.3 trillion yen for electricity generation) from FY2010, helping widen an overall trade deficit to $4.7 trillion yen.

(The CIF-based import price for FY2012 is assumed at $110 per barrel for crude oil, $749 per ton for LNG and $137 per ton for steaming coal.)

(2) Outlook on Energy Supply and Demand in FY2011 and FY2012

<Primary energy supply and final energy consumption>

In FY2011, **final energy consumption** in Japan is expected to **decline 3.9%** from the previous year. Consumption is projected to fall 3.1% due to a production drop in the industrial sector, 6.2% due to electricity savings and temperature conditions in the residential/commercial sector, and 2.9% due to temperature conditions and slack cargo traffic in the transportation sector. **Primary energy supply,** including electricity generation and energy consumption in the energy conversion sector, is expected to **decline 3.7%**. Among fossil fuel imports that are increasing on the expansion of fossil electricity generation, oil is projected to grow by 4.07 million kiloliters from the previous year, and natural gas by 23.89 million tons in terms of LNG. Thus, Energy-based **carbon dioxide emissions** are assumed to **increase 2.1%.**

In "**Case (A): without electricity restriction"** for FY2012, **final energy consumption** is projected to **increase 1.1%** from the previous year due mainly to an economic and production activity recovery. Such consumption is projected to rise 2.7% due to a production recovery in the industrial

sector. In the transportation sector, such consumption is estimated to decline 1.1% on improvements in vehicle fuel efficiency. The residential/commercial sector is expected to limit its primary energy consumption growth to 0.4% due to electricity savings and temperature conditions, despite a recovery of services. **Primary energy supply in Japan** is predicted to **increase 1.0%** from the previous year. **CO_2 emissions** are projected to **decline 5.3%** on an increase in nuclear power generation.

In "**Case (B): with electricity restriction," final energy consumption** is expected to post **a 0.2% drop** (1.3 percentage points lower than that in Case (A)). The industrial sector may limit final energy consumption **growth to 0.6%**, while the residential/commercial sector may **reduce such consumption by 0.1%** on electricity savings. The transportation sector may post **a 1.8% drop**. Domestic **primary energy supply** is expected to score a rise of 0.2% (down 0.8 points from Case (A)). Energy-based **CO_2 emissions** are projected to **increase 5.5%** as fossil electricity generation is expanded to cover a fall in nuclear power generation. Among fossil fuel imports, coal is expected to go up by 6.3 million tons from FY2010, oil by 15.13 million kiloliters, and natural gas by 19.95 million tons in LNG terms. If electricity consumption is cut 1% throughout FY2012, natural gas consumption could be reduced by about 1.5 million tons.

<Sales-based energy demand>

In FY2011, **electricity sales** are expected to post a substantial **decline of 5.3%** from the previous year on a production slowdown, electricity-saving measures and temperature conditions. In FY 2012**,** electricity sales are projected to **rise 0.2%** from the previous year on a production recovery in "**Case (A): without electricity restriction."** In "**Case (B): with electricity restriction,"** production stagnation and electricity-saving measures are likely to limit the electricity sales growth to 1.5%.

In FY2011, **town gas sales** are expected to limit **their increase to 0.3%** from the previous year as a substantial decline in air-conditioning demand in the commercial/other sector nearly offset an expansion in industrial gas demand. In FY 2012, town gas sales are projected to **expand 2.5%** from the previous year on a firm gain in industrial and commercial demand amid an economic recovery in "**Case (A): without electricity restriction."** In "**Case (B): with electricity restriction,"** the **growth may be limited to 1.3%,** with industrial demand affected greatly.

In FY2011, **fuel oil sales** are projected to **decrease 0.1%** from the previous year as a substantial increase in demand for fuel oil C for power generation is more than offset by slower naphtha and fuel oil sales under the production stagnation and sluggish sales of auto and heating fuels under temperature effects. In FY 2012, fuel sales are estimated to **decrease 3.9%** from the previous year on a continued fuel switch from oil to town gas, improvements in auto fuel efficiency and a plunge

in demand for fuel oil for power generation despite an economic recovery in "**Case (A): without electricity restriction."** In "**Case (B): with electricity restriction,"** fuel oil sales are expected to **rise 1.8%** due to a substantial increase in demand for fuel oil for power generation despite a general demand fall amid an economic stagnation.

(3) Evaluating Possible Impacts of Factors Affecting Energy Supply/Demand in FY2012

If **the mean ambient temperature in summer (July to September)** is 1°C higher than the average-year level, **domestic primary energy supply will increase by 0.3%.** The higher temperature will boost energy demand in the commercial sector with greater air-conditioning demand faster than in the residential sector. It will also increase energy demand in the transportation sector as greater air-conditioning demand in cars deteriorates fuel efficiency. Under the higher temperature, electricity will post the largest demand growth among energy sources. A town gas demand rise will be limited, but the impact of higher temperatures on town gas demand has been increasing due to a diffusion of gas-based air-conditioners over recent years.

If **the mean ambient temperature in winter (January to March)** is 1°C lower than the average-year level, annual **domestic primary energy supply will increase by 0.3%.** In contrast to the higher summer temperature case, the lower winter temperature will have a greater impact on the residential sector than on the commercial sector by expanding heating and hot-water demand. Under the lower winter temperature, town gas and LPG will post the largest demand growth among energy sources.

An electricity demand increase emerging from temperature changes could surpass any supply increase. But such situation is not taken into account for this evaluation. If the mean ambient temperature in summer is 1°C higher in "**Case (B): with electricity restriction,"** electricity demand may increase 2.4% on a kilowatt-hour basis. Peak electricity demand may rise 3.6% on a kilowatt-hour basis. In such event, additional electricity-saving measures, including patience, as well as a further fall in economic and production activities, may be unavoidable.

【Summary Table (Case (A): without electricity restriction)】

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012
		(Actual)	1st half	2nd half	Total	1st half	2nd half	Total	(Forecast)
Key economic indicators	GDP	**495,417**	**252,961**	**258,031**	**510,992**	**249,895**	**259,335**	**509,230**	**519,012**
	(Chained to year 2005, in billions of yen)	(-2.1)	(4.9)	(1.5)	(3.1)	(-1.2)	(0.5)	(-0.3)	(1.9)
	Private demand	**364,657**	**187,200**	**188,475**	**375,675**	**185,736**	**189,268**	**375,003**	**379,730**
		[-3.1]			[2.2]			[-0.2]	[1.1]
	Public demand	**118,037**	**57,189**	**61,514**	**118,704**	**58,226**	**63,563**	**121,789**	**124,453**
		[0.9]			[0.1]			[0.6]	[0.6]
	External demand	**11,673**	**8,635**	**8,189**	**16,825**	**6,240**	**6,973**	**13,214**	**14,839**
		[0.2]			[0.8]			[-0.8]	[0.1]
	Domestic corporate goods price index	**102.6**	**102.9**	**103.7**	**103.3**	**105.6**	**105.5**	**105.5**	**105.9**
	(100 for 2005)	(-5.2)	(0.1)	(1.4)	(0.7)	(2.6)	(1.8)	(2.2)	(0.4)
	Consumer price index	**100.5**	**100.0**	**99.8**	**99.9**	**99.8**	**99.4**	**99.6**	**99.2**
	(100 for 2010)	(-1.5)	(-0.9)	(-0.4)	(-0.6)	(-0.2)	(-0.3)	(-0.2)	(-0.4)
	Index of industrial production	**86.1**	**94.6**	**93.1**	**93.9**	**90.3**	**94.2**	**92.3**	**96.9**
	(100 for 2005)	(-8.8)	(17.4)	(1.7)	(9.1)	(-4.5)	(1.2)	(-1.7)	(5.0)
	Crude steel production	**96,449**	**55,424**	**55,369**	**110,792**	**53,312**	**54,265**	**107,576**	**110,550**
	(1,000 tons)	(-8.6)	(27.9)	(4.2)	(14.9)	(-3.8)	(-2.0)	(-2.9)	(2.8)
	Ethylene production	**7,219**	**3,327**	**3,671**	**6,999**	**3,293**	**3,384**	**6,677**	**6,942**
	(1,000 tons)	(10.7)	(-5.3)	(-0.9)	(-3.0)	(-1.0)	(-7.8)	(-4.6)	(4.0)
	Exchange rate	**92.8**	**88.9**	**82.5**	**85.7**	**79.8**	**77.5**	**78.6**	**77.5**
	(Yen/US$)	(-7.6)	(-6.8)	(-8.6)	(-7.7)	(-10.3)	(-6.0)	(-8.2)	(-1.4)
	Crude oil CIF price	**68.9**	**78.6**	**89.5**	**84.0**	**114.0**	**110.0**	**112.0**	**110.0**
	(US$/Bbl)	(-23.5)	(27.5)	(17.4)	(21.9)	(45.0)	(23.0)	(33.3)	(-1.8)
	Heating degree-days	**952**	**77**	**998**	**1,075**	**53**	**946**	**999**	**980**
		(6.1)	(122.4)	(8.8)	(12.9)	(-31.1)	(-5.2)	(-7.1)	(-1.9)
	Cooling degree-days	**329**	**560**	**0**	**560**	**472**	**2**	**474**	**425**
		(-17.5)	(70.6)	(-75.0)	(70.5)	(-15.7)	(1600.0)	(-15.4)	(-10.4)
Key energy indicators	Primary energy supply	**491,315**	**250,850**	**262,902**	**513,752**	**236,308**	**258,561**	**494,869**	**500,063**
	(10^10kcal = KTOE)	(-4.0)	(8.5)	(1.1)	(4.6)	(-5.8)	(-1.7)	(-3.7)	(1.0)
	Final energy consumption	**331,043**	**164,813**	**177,925**	**342,738**	**155,468**	**173,874**	**329,342**	**332,895**
	(10^10kcal = KTOE)	(-2.4)	(7.1)	(0.4)	(3.5)	(-5.7)	(-2.3)	(-3.9)	(1.1)
	Industrial sector	**155,327**	**78,625**	**82,480**	**161,105**	**75,375**	**80,816**	**156,191**	**160,339**
		(-3.2)	(8.3)	(-0.3)	(3.7)	(-4.1)	(-2.0)	(-3.1)	(2.7)
	Residential/commercial sector	**92,901**	**43,574**	**54,468**	**98,042**	**39,658**	**52,319**	**91,976**	**92,309**
		(-1.7)	(9.0)	(2.9)	(5.5)	(-9.0)	(-3.9)	(-6.2)	(0.4)
	Transportation sector	**82,815**	**42,614**	**40,977**	**83,591**	**40,435**	**40,739**	**81,174**	**80,247**
		(-1.7)	(3.3)	(-1.4)	(0.9)	(-5.1)	(-0.6)	(-2.9)	(-1.1)
	Electricity sales	**889.4**	**476.0**	**466.1**	**942.1**	**439.7**	**452.6**	**892.3**	**917.7**
	(billion kWh)	(-3.4)	(9.1)	(2.9)	(5.9)	(-7.6)	(-2.9)	(-5.3)	(2.8)
	Town gas sales	**33,837**	**16,574**	**18,710**	**35,283**	**16,380**	**18,995**	**35,375**	**36,252**
	(million m^3/10,000kcal)	(-1.9)	(8.3)	(0.9)	(4.3)	(-1.2)	(1.5)	(0.3)	(2.5)
	Fuel oil sales	**195,122**	**92,031**	**103,917**	**195,948**	**88,605**	**107,174**	**195,779**	**188,199**
	(1,000 kl)	(-3.0)	(2.4)	(-1.3)	(0.4)	(-3.7)	(3.1)	(-0.1)	(-3.9)
	CO_2 emissions (energy-based)	**1,075**			**1,122**			**1,146**	**1,086**
	(milion t.-C)	(-5.5)			(4.3)			(2.1)	(-5.3)
	(100 for FY1990)	**101.5**			**105.9**			**108.2**	**102.5**

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

1. Figures in parentheses indicate year-to-year percentage changes, except contributions to GDP growth.

2. Contributions to GDP growth may not add up to the total due to minor data deviations.

3. Industrial sector consumption includes non-energy uses.

【Summary Table (Case (B): with electricity restriction)】

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012
		(Actual)	1st half	2nd half	Total	1st half	2nd half	Total	(Forecast)
Key economic indicators	GDP	**495,417**	**252,961**	**258,031**	**510,992**	**249,895**	**259,335**	**509,230**	**509,957**
	(Chained to year 2005, in billions of yen)	(-2.1)	(4.9)	(1.5)	(3.1)	(-1.2)	(0.5)	(-0.3)	(0.1)
	Private demand	**364,657**	**187,200**	**188,475**	**375,675**	**185,736**	**189,268**	**375,003**	**378,040**
		[-3.1]			[2.2]			[-0.2]	[0.7]
	Public demand	**118,037**	**57,189**	**61,514**	**118,704**	**58,226**	**63,563**	**121,789**	**124,441**
		[0.9]			[0.1]			[0.6]	[0.6]
	External demand	**11,673**	**8,635**	**8,189**	**16,825**	**6,240**	**6,973**	**13,214**	**7,878**
		[0.2]			[0.8]			[-0.8]	[-1.1]
	Domestic corporate goods price index	**102.6**	**102.9**	**103.7**	**103.3**	**105.6**	**105.5**	**105.5**	**105.8**
	(100 for 2005)	(-5.2)	(0.1)	(1.4)	(0.7)	(2.6)	(1.8)	(2.2)	(0.3)
	Consumer price index	**100.5**	**100.0**	**99.8**	**99.9**	**99.8**	**99.4**	**99.6**	**99.2**
	(100 for 2010)	(-1.5)	(-0.9)	(-0.4)	(-0.6)	(-0.2)	(-0.3)	(-0.2)	(-0.4)
	Index of industrial production	**86.1**	**94.6**	**93.1**	**93.9**	**90.3**	**94.2**	**92.3**	**93.8**
	(100 for 2005)	(-8.8)	(17.4)	(1.7)	(9.1)	(-4.5)	(1.2)	(-1.7)	(1.6)
	Crude steel production	**96,449**	**55,424**	**55,369**	**110,792**	**53,312**	**54,265**	**107,576**	**108,191**
	(1,000 tons)	(-8.6)	(27.9)	(4.2)	(14.9)	(-3.8)	(-2.0)	(-2.9)	(0.6)
	Ethylene production	**7,219**	**3,327**	**3,671**	**6,999**	**3,293**	**3,384**	**6,677**	**6,692**
	(1,000 tons)	(10.7)	(-5.3)	(-0.9)	(-3.0)	(-1.0)	(-7.8)	(-4.6)	(0.2)
	Exchange rate	**92.8**	**88.9**	**82.5**	**85.7**	**79.8**	**77.5**	**78.6**	**77.5**
	(Yen/US$)	(-7.6)	(-6.8)	(-8.6)	(-7.7)	(-10.3)	(-6.0)	(-8.2)	(-1.4)
	Crude oil CIF price	**68.9**	**78.6**	**89.5**	**84.0**	**114.0**	**110.0**	**112.0**	**110.0**
	(US$/Bbl)	(-23.5)	(27.5)	(17.4)	(21.9)	(45.0)	(23.0)	(33.3)	(-1.8)
	Heating degree-days	**952**	**77**	**998**	**1,075**	**53**	**946**	**999**	**980**
		(6.1)	(122.4)	(8.8)	(12.9)	(-31.1)	(-5.2)	(-7.1)	(-1.9)
	Cooling degree-days	**329**	**560**	**0**	**560**	**472**	**2**	**474**	**425**
		(-17.5)	(70.6)	(-75.0)	(70.5)	(-15.7)	(1600.0)	(-15.4)	(-10.4)
Key energy indicators	Primary energy supply	**491,315**	**250,850**	**262,902**	**513,752**	**236,308**	**258,561**	**494,869**	**495,824**
	(10^10kcal = KTOE)	(-4.0)	(8.5)	(1.1)	(4.6)	(-5.8)	(-1.7)	(-3.7)	(0.2)
	Final energy consumption	**331,043**	**164,813**	**177,925**	**342,738**	**155,468**	**173,874**	**329,342**	**328,734**
	(10^10kcal = KTOE)	(-2.4)	(7.1)	(0.4)	(3.5)	(-5.7)	(-2.3)	(-3.9)	(-0.2)
	Industrial sector	**155,327**	**78,625**	**82,480**	**161,105**	**75,375**	**80,816**	**156,191**	**157,168**
		(-3.2)	(8.3)	(-0.3)	(3.7)	(-4.1)	(-2.0)	(-3.1)	(0.6)
	Residential/commercial sector	**92,901**	**43,574**	**54,468**	**98,042**	**39,658**	**52,319**	**91,976**	**91,854**
		(-1.7)	(9.0)	(2.9)	(5.5)	(-9.0)	(-3.9)	(-6.2)	(-0.1)
	Transportation sector	**82,815**	**42,614**	**40,977**	**83,591**	**40,435**	**40,739**	**81,174**	**79,712**
		(-1.7)	(3.3)	(-1.4)	(0.9)	(-5.1)	(-0.6)	(-2.9)	(-1.8)
	Electricity sales	**889.4**	**476.0**	**466.1**	**942.1**	**439.7**	**452.6**	**892.3**	**905.5**
	(billion kWh)	(-3.4)	(9.1)	(2.9)	(5.9)	(-7.6)	(-2.9)	(-5.3)	(1.5)
	Town gas sales	**33,837**	**16,574**	**18,710**	**35,283**	**16,380**	**18,995**	**35,375**	**35,828**
	(million m^3/10,000kcal)	(-1.9)	(8.3)	(0.9)	(4.3)	(-1.2)	(1.5)	(0.3)	(1.3)
	Fuel oil sales	**195,122**	**92,031**	**103,917**	**195,948**	**88,605**	**107,174**	**195,779**	**199,380**
	(1,000 kl)	(-3.0)	(2.4)	(-1.3)	(0.4)	(-3.7)	(3.1)	(-0.1)	(1.8)
	CO_2 emissions (energy-based)	**1,075**			**1,122**			**1,146**	**1,209**
	(milion t.-C)	(-5.5)			(4.3)			(2.1)	(5.5)
	(100 for FY1990)	**101.5**			**105.9**			**108.2**	**114.1**

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

1. Figures in parentheses indicate year-to-year percentage changes, except contributions to GDP growth.
2. Contributions to GDP growth may not add up to the total due to minor data deviations.
3. Industrial sector consumption includes non-energy uses.

【Trade Balance】

	FY2010 (Actual)	FY2011 (Forecast)	FY2012 (Forecast)	
			Without electricity restriction	With electricity restriction
Exports (in billions of yen)	67,792	67,093	70,529	64,517
Imposts (in billions of yen)	62,413	68,479	68,871	69,263
Fossil fuel imports	16,439	20,648	19,079	21,059
Net exports (in billions of yen)	5,379	-1,386	1,658	-4,746

【Power Generation Fuel Cut Accompanying 1% Consumption Reduction】

	Fuel demand cut
Coal (in 1,000 tons of steaming coal)	3,160
Oil (in 1,000 kiloliters of crude oil)	2,160
Natural gas (in 1,000 tons of LNG)	1,487

Note: In this case, electricity consumption is cut by 1% on an annual basis.
The demand cut for each fuel covers all power generation reduction.

【Effects of Temperature Changes (Case (A): without electricity restriction)】

	Summer (July-September) temperature: up 1℃			Winter (January-March) temperature: down 1℃		
	Demand change	Percentage change		Demand change	Percentage change	
		Qtr.-to-qtr.	Yr.-to-yr.		Qtr.-to-qtr.	Yr.-to-yr.
Domestic primary energy supply (10^10kcal)	**1,535**	(1.2)	(0.3)	**1,450**	(1.1)	(0.3)
Final energy consumption (10^10kcal)	**676**	(0.8)	(0.2)	**976**	(1.1)	(0.3)
Industrial sector	**71**	(0.2)	(0.0)	**185**	(0.5)	(0.1)
Residential sector	**101**	(1.1)	(0.2)	**546**	(2.9)	(1.1)
Commercial sector	**328**	(3.0)	(0.8)	**246**	(2.2)	(0.6)
Transportation sector	**176**	(0.8)	(0.2)	**-**	(0.0)	(0.0)
Electricity sales (million kWh)	**5,769**	(2.4)	(0.6)	**3,308**	(1.4)	(0.4)
Town gas sales (million m^3/10,000kcal)	**57**	(0.7)	(0.2)	**232**	(2.1)	(0.6)
Fuel oil sales (1,000kl)	**621**	(1.4)	(0.3)	**632**	(1.3)	(0.3)
LPG sales (1,000t)	**-57**	(-1.6)	(-0.4)	**102**	(2.3)	(0.6)
CO2 emissions（milion tons）	**4**	(1.6)	(0.4)	**4**	(1.4)	(0.3)

Note: The industrial sector consumption includes non-energy uses.

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Introduction

This report is designed to forecast energy supply and demand in Japan for FY2011 and FY2012. Because energy demand can be positioned as a "derivative demand" arising out of economic activities (more fundamental demand), the economic trends need to be evaluated first. The world economy continues to grow moderately as China and other emerging countries sustain high growth, despite slowing growth mainly in industrial countries. On the other hand, the Japanese economy has recovered faster than expected from the damage inflicted by the Great East Japan Earthquake and is restoring the pre-disaster situation despite the protracted appreciation of the yen and the delay of political actions for recovery. Energy demand, including electricity demand, has been held down as an electricity generation capacity decline emerging from the disaster has forced all sectors to substantially save electricity, with an electricity consumption restriction order issued last summer for the first time in 37 years.

This report is organized as follows: Chapter 1 presents an outlook on economic and production trends for FY2011 and FY2012, based on which we have estimated energy supply and demand. The outlook is given for two cases. In "Case (A): without electricity restriction," nuclear power plants will restart from next summer, with no electricity shortages, and no impact on the national economy or industry due to electricity problems. In "Case (B): with electricity restriction," no nuclear power plants will restart during the forecast period, meaning that the national economy and industry will suffer from an electricity shortage throughout next summer. Based on the economic and production trends outlined in Chapter 1, Chapter 2 forecasts energy supply and demand in FY2011 and FY2012. The energy supply and demand outlook, as well as the economic and industrial outlook, is given for the two cases. Chapter 2 also describes a breakdown of energy supply and demand by energy source (based on industrial statistics) and domestic primary energy supply and final energy consumption (based on energy balance sheets). Chapter 3 provides a sensitivity analysis to examine the impact of ambient temperature changes on energy supply and demand.

1. OUTLOOK ON KEY ECONOMIC INDICATORS FOR FY2011 AND FY2012

1-1 Short-Term Outlook Framework (Note)

In making this outlook, we qualitatively surveyed trends of energy supply and demand determinants and used two quantitative models—(1) the macroeconomic model and (2) the energy supply/demand model.

Concerning the major economic indicators on which our forecasts are based, we made the following assumptions. Even given that a global economic slowdown is likely to occur due to the European debt and banking crisis, the world economy is expected to continue expanding moderately as China and other emerging counties are predicted to sustain high growth. The CIF-based price of crude oil imports into Japan is assumed to average $110/barrel in FY2012, almost unchanged from the present level, while European and other industrial countries are likely

to see decelerated economic growth despite a continuous upward trend of global oil demand (for details, see "Prospects for the International Oil and Gas Markets in 2012" by Ken Koyama, December 22, 2011). As implementation schedules and financial sizes of various government-cited policies are uncertain, we did not, in principle, take into account economic, energy, and environmental policies. As for the foreign exchange rate, we assumed the dollar to remain around 78 yen. Regarding ambient temperatures that affect energy demand particularly in the residential/commercial sector, we assumed a warmer winter for the second half of FY2011 than for the same period of the previous year, based on a three-month forecast by the Japan Meteorological Agency (as released on November 25, 2011). For FY2012, we assumed the summer and winter averages over the past 10 years.

(Note) The estimates in this report are based on information made available by December 16, 2012.

1-2 Case Assumptions

All nuclear power plants in operation in Japan will be halted for regular checkups from this winter to next spring. If the plants under the checkups cannot be restarted, no nuclear power plants will be in operation in Japan in the spring of 2012. For this outlook, we assumed “Case (A): without electricity restriction” and “Case (B): with electricity restriction” regarding summer electricity supply and demand.

In Case (A), nuclear power plants are assumed to restart gradually from the summer of 2012. In this case, summer electricity supply capacity is projected at 187.79 GW against the maximum demand at 178.73 GW. The reserve capacity will become a mere 5.1% (0.1% taking a 5.0% reserve margin into account). However, if continuous electricity-saving measures (for a 4.3% consumption reduction on a kilowatt basis) are taken into account, the reserve capacity rate may increase. According to the results of electricity savings and questionnaire surveys for the summer of 2011, the residential and commercial sector has relatively greater room to save electricity. Electricity consumption is assumed to be saved by 2.8% on a kilowatt basis in the residential sector and by 9.9% in the commercial sector. On the other hand, the industrial sector suffered from increases in the labor costs and the load on workers when it took advantage of holiday and nighttime operations to reduce peak electricity demand last summer. As such operational shifts are conceived as difficult in the future, we assumed that the industrial sector will save electricity consumption by about 1.1% on a kilowatt basis based on questionnaire surveys. In this case, no electricity supply restriction is assumed for the summer of 2012.

In Case (B), no nuclear power generation is assumed to be implemented after the spring of 2012, when all the nuclear power plants in operation will be halted for checkups. Given supply capacity at 165.86 GW, the reserve capacity comes to minus 7.2% (minus 12.2% taking a 5.0% reserve margin into account), indicating a substantial supply shortage. Electricity-saving measures for Case (B) are assumed to be enhanced to achieve a 6.8% consumption cut on a kilowatt basis without affecting civic life and economic activities (electricity consumption is assumed to be saved by 7.0% on a kilowatt basis in the residential sector, by 11.3% in the commercial sector, and by

3.1% in the industrial sector). Even if the electricity savings are taken into account, supply will still be 5.4% short of peak demand. In order to eliminate the supply-demand gap, economic and production activities will have to be reduced to cut electricity demand to a lower level than in "Case A without electricity restriction" so as to balance demand with supply. If production were to be reduced, priority would be given to domestic demand rather than overseas demand (or production would shift overseas under electricity restriction). Therefore, exports among economic activities are assumed to plunge. Real GDP in the July-September quarter of 2012 in Case (B) is estimated to be 4.0 trillion yen (3.1%) less than in Case (A).

1-3 Macroeconomic Outlook (Case (A): without electricity restriction)

The world economy in FY2011 is generally seeing decelerating growth due to the direct and indirect effects of the European debt and banking crisis. However, China and other emerging countries are less vulnerable to these effects than such industrial countries as European nations and the United States, and are expected to sustain high growth. Even among industrial countries, while some European countries, such as Greece and Italy, are plagued with serious sovereign debt problems, the United States sees signs of immediate economic improvements.

In the United States, prolonged balance sheet adjustments have worked to slow economic growth. But signs of the economic recovery have been seen recently, such as recent improvements in the unemployment rate, retail sales, and the industrial production index. The recovery is expected to continue as monetary easing effects spill over further with disposable income increasing. In Europe, however, the banking crisis is spreading due to a deepening sovereign debt crisis in such countries as Greece and Italy, affecting the real economy. In our analysis, the debt problem is not assumed to become any more serious. Given high unemployment rates and private consumption declines, however, an economic growth slowdown in Europe is seen as unavoidable. Emerging economies have recently decelerated growth, owing to monetary tightening, slack exports to Europe and the United States, and Thai floods. However, the deceleration is less serious than for industrial countries. In particular, China is expected to sustain far higher economic growth than industrial countries because it has maintained high levels of private consumption and fixed asset investment.

Japan's real GDP in FY2011 is expected to contract 0.3% from the previous year. The Japanese economy will recover positive growth thanks to the faster-than-expected restoration of production facilities and supply chains in the second half of the year after plunging due to the Great East Japan Earthquake in the first half. As the second half recovery falls short of offsetting the first half plunge, GDP for the entire FY2011 is expected to post the first contraction in two years. Among GDP components, external demand may post a substantial decline. Private-sector demand may limit a drop to a small level because of the faster-than-expected restoration. Public-sector demand may positively contribute to GDP thanks to an increase in government spending on anti-disaster measures and support for post-disaster reconstruction.

Domestic private sector demand is expected to contribute to lower real GDP growth by

0.2 percentage points. Private final consumption plunged just after the disaster, but recovered in the July-September quarter thanks to an early rally in auto production and robust demand for energy-saving electrical home appliances. In the second half of FY2011, however, private final consumption is projected to level off due to a reactionary fall in demand for such home appliances and a winter bonus drop. For the entire FY2011, private final consumption is likely to post a small increase (0.2%) from the previous year. Private residential investment posted a high growth rate in the first half of FY2011 thanks to a recovery from a plunge caused by the Lehman Shock, reconstruction demand in the disaster-affected region, and a housing rush toward the termination of the housing eco-point system. Despite some possible reactionary decline after the housing rush, private residential investment is likely to retain high growth, supported by the reconstruction demand in the second half. For the entire FY2011, private residential investment is projected to grow 5.1% from the previous year. Private nonresidential investment turned upward in the July-September quarter due to the relaxation of supply constraints caused by the disaster and is expected to recover thanks to the strength of post-disaster reconstruction demand in and after the second half of FY2011. At present, however, the yen's further appreciation and an overseas economic slowdown are dragging down private nonresidential investment in Japan, so a full recovery cannot be expected to occur within FY2011 (private nonresidential investment for FY2011 is expected to fall 1.2% from the previous year).

Public demand as a whole is estimated to work to push real GDP growth by 0.6 percentage points. In the first half of FY2011, government consumption was pushed up by spending on disaster-relief and post-disaster reconstruction support measures, including disaster aid operations of the Self-Defense Forces and the removal of rubbles. Although part of such spending is likely to wane, rubble removal and other operations are expected to continue, pushing up government consumption. Further, healthcare and nursing care spending is likely to continue increasing as the population ages (government consumption in FY2011 is predicted to grow 1.8% from the previous year). Public investment growth was limited to a small level in the first half of FY2011 as the formation of a budget for post-disaster reconstruction demand was delayed. As such demand is likely to expand in the second half, particularly in the January-March quarter, public investment for the whole of FY2011 is expected to post a substantial growth rate of 6.1% from the previous year.

External demand as a whole is projected to work to lower real GDP growth by 0.8 percentage points. Exports declined substantially in the first half due to supply constraints caused by the disaster. However, they may turn upward thanks to the fast recovery of production facilities and supply chains in the second half. Nevertheless, export growth in the second-half may fall short of offsetting the first-half plunge due to an overseas economic slowdown and the yen's appreciation. As a result, exports are expected to slip below the previous year's level (down 0.3% from the previous year). Imports increased in the first half thanks to three factors: substitutional demand to cover losses in production capacity caused by the disaster, increased demand for fossil

fuels for power generation, and the yen's appreciation. In the second half, domestic production facilities are recovering to reduce the need for foreign goods covering domestic production losses. But imports are expected to continue increasing as demand grows for fossil fuels for power generation amid a decline in the capacity utilization ratio for nuclear power plants and as the yen's prolonged strength keeps purchases of cheap imports at high levels. As a result, imports for the whole of FY2011 are expected to grow 5.0% from the previous year.

The world economy in FY2012 is projected to expand moderately thanks to the strength of the U.S. economic recovery and emerging countries' robust growth, despite a further economic slowdown in Europe. The United States is expected to post faster growth than in FY2011 thanks to the continuation of the recovery from the second half of FY2011 and a rally in residential demand. On the other hand, the European debt and banking crisis is unlikely to end soon, indicating that Europe has little chance to get back on a growth path within FY2012. Nevertheless, Europe as a whole is projected to maintain positive economic growth because the U.S. recovery and emerging countries' growth will allow Germany and other European countries to expand exports. Emerging countries are projected to sustain high economic growth, even though some deceleration is expected. If monetary tightening runs its course in these countries, monetary easing may drive them to maintain high growth. If the Chinese economy maintains high growth, it may have a positive impact on other export-oriented Asian economies.

The Japanese economy in FY2012 is expected to get back on a recovery path thanks to the strength of the world economy's moderate expansion and growing post-disaster reconstruction demand. Particularly, emerging countries' high economic growth may serve as a primary driver of Japan's economic recovery. Japan's real GDP in FY2012 is projected to grow 1.9% from the previous year.

Domestic private sector demand is expected to work to raise real GDP growth by 1.1 percentage points. Private final consumption is projected to expand in line with an overall economic recovery in FY2012, posting 0.6% increase from the previous year. Private residential investment is projected to increase 5.0% from the previous year as it is supported by economic recovery and reconstruction demand. Private nonresidential investment, though dragged down by the yen's strength, is expected to expand firmly due to robust domestic and external demand, logging a 3.3% increase from the previous year.

Public demand as a whole is expected to account for 0.6 percentage points of the real GDP growth rate for FY2012. Healthcare and nursing care spending may continuously work to push up government consumption, while disaster-relief and reconstruction spending may drop off. Among disaster-related expenses, rubble removal expenses are expected to remain in and after FY2012, helping government consumption in the year to increase 1.0% from the previous year. Public investment in the year is projected to post substantial growth (up 7.5% from the previous year) for the second straight year as reconstruction outlays are implemented in a full-fledged manner.

External demand as a whole is expected to account for 0.1 percentage points of the real GDP growth in FY2012. Exports are projected to increase substantially (up 5.3% from the previous year), supported by the world economy's moderate expansion, including growth in emerging countries. Fossil fuel imports are projected to decline as nuclear power plants resume operations. However, other imports are expected to increase due to a domestic economic recovery. Imports as a whole are projected to expand 4.0% from the previous year.

1-4 Outlook on Production by Industry (Case (A): without electricity restriction)

In FY2011, the Index of Industrial Production is expected to fall 1.7% from the previous year after a rise in FY2010. In the first half of the year, the index posted a substantial fall from a year earlier as industrial production plunged due to production facility and supply chain interruptions. In the second half, production is expected to turn upward thanks to the completed recovery from the disaster and post-disaster reconstruction demand for such materials as cement and steel. However, the index for the whole of FY2011 is expected to decline from the previous year, owing to the substantial fall in the first half.

In FY2012, the Index of Industrial Production is expected to log a substantial increase of 5.0% from the previous year. Production is projected to be expanded mainly in the export-oriented industries, including transportation and electric machinery builders, due to continuous high growth in emerging economies and the U.S. economic recovery. In Japan, private sector demand may recover thanks to growing reconstruction demand, helping to boost production. Each major industry's production trend follows:

(1) Crude steel

In the first half of FY2011, crude steel output plunged as the disaster damaged major steelmaking facilities and reduced production in other industries. While steel exports declined due to the supply constraint, imports expanded. In the second half, crude steel output is projected to rally thanks to the recovery of production facilities and the rebound of output for housing and manufacturing industries. At present, however, exports are slackening because of the yen's strength, monetary tightening in Asian countries, and a steel supply glut in Asia. Inventory adjustments are now required. Crude steel output in FY2011 may have difficulty in restoring the FY2010 level, totaling 107.58 million tons (2.9% increase from the previous year).

In FY 2012, crude steel exports may slacken due to the yen's strength and a supply glut, with imports remaining high. However, given growing post-disaster reconstruction demand under the third supplementary budget for FY2011 and a moderate recovery in private sector demand, crude steel output is projected to rise back to 110.55 million tons (2.8% increase from the previous year), close to the FY2010 level.

(2) Ethylene

In the first half of FY2011, ethylene production declined slightly as output recovered rapidly after a decline caused by disaster-inflicted damage to some production facilities. In the second half, however, ethylene production is failing to grow due to an export fall and high import levels under the yen's strength and inventory adjustments, indicating a sharp decline from FY2010. Ethylene output in the whole of FY2011 is expected to post a sharp decline of 4.6% from the previous year to 6.68 million tons.

In FY2012, ethylene output, though continuing to face competition from imports, is projected to recover thanks to overseas economic growth. Domestic demand is also projected to increase firmly due to growing post-disaster reconstruction demand and a substantial expansion in transportation machinery and other production. FY2012 ethylene output in FY2012 is expected to increase 4.0% from the previous year to 6.94 million tons, almost the same as the FY2010 level.

(3) Paper/paperboard

In the first half of FY2011, paper output declined as the disaster damaged production facilities and negatively affected consumer sentiment. While paper exports declined with priority given to domestic shipments under supply constraints, imports increased because of the yen's strength, as well as demand for goods covering production losses caused by the disaster. Although the disaster affected paperboard production facilities as well, paperboard demand, including food-related demand, was brisk. In the second half, supply constraints may ease thanks to the restoration of production facilities and the improvement of consumer sentiment. On the other hand, paper demand is projected to slacken due to the downward trend for newspapers, printing, and information paper products. Paperboard demand is expected to remain robust as cargo traffic increases thanks to an overall industrial production recovery. Total paper/paperboard output for FY2011 is projected at 26.57 million tons (2.8% decrease from the previous year).

In FY2012, paper output, though supported by a moderate expansion in private sector demand, may have difficulties in restoring the pre-disaster level due to high-level imports amid the yen's strength. But paperboard production will remain firm, supported by an overall production and consumption expansion thanks to an economic recovery. The total paper/paperboard output in FY2012 is projected to be 27.60 million tons (3.9% increase from the previous year).

(4) Cement

In the first half of FY2011, cement supply capacity declined as the disaster damaged production facilities and forced public works to be postponed or suspended. However, thanks to brisk private sector demand, including a housing rush just before the termination of the housing eco-point system, cement output exceeded the year-before level. In the second half, cement production will increase further due to the recovery of disaster-affected production facilities and post-disaster reconstruction demand. Cement output for the whole of FY2011 is estimated at 56.91 million tons (1.5% increase from the previous year).

In FY2012, cement output will increase faster than in the previous year thanks to the strength of growing post-disaster reconstruction demand and a housing demand rise due to economic recovery. Even if domestic demand remains firm, however, exports may be capped by supply constraints after a production capacity cut in FY2010. Cement production in FY2012 is projected to be 57.91 million tons (1.7% increase from the previous year).

(5) Automobiles

In the first half of FY2011, automobile output plunged as the disaster disrupted production facilities and supply chains. As the production plunge was attributable to the supply constraint, however, vehicle output smoothly recovered due to the fast restoration of production facilities and firm demand in Asian and other emerging countries. In the second half, vehicle output is projected to increase to almost offset the first-half drop thanks to robust external demand and a domestic demand recovery. In the whole of FY2011, vehicle production is expected to total 8.95 million units (0.5% decrease from the previous year), limiting a decline to a small level.

In FY2012, exports to emerging countries are expected to continue robust growth, while domestic demand is likely to recover moderately. Driven by external demand, vehicle production in the year is projected to reach 9.65 million units (7.8% increase from the previous year).

(6) General and electrical machinery (Note)

In the first half of FY2011, domestic demand for general and electrical machinery was brisk thanks to the popularity of power generation equipment as well as energy-saving products, such as room air conditioners, while a production capacity fall caused by the disaster and the earlier termination of the eco-point incentive system for electrical appliances forced general and electrical machinery output to decline from a year earlier. In the second half, the production of white goods may decline as their sales fall in response to the termination of the eco-point system. However, the production of heavy electrical equipment is projected to remain brisk due to a rise in domestic demand, including that for power generation equipment. The production index for general and electrical machinery for the whole of FY2011 is projected to see a limited decline of 0.4% from the previous year.

In FY2012, general and electrical machinery output is projected to log a high growth rate of 4.9% from the previous year thanks to continuously high growth in emerging economies, a moderate increase in domestic consumption and the continuous domestic deployment of power generation equipment.

(Note) “General and electrical machinery” covers general machinery, electrical machinery, information and telecommunications equipment, electronic parts and devices, precision machinery and metal products.

1-5 Economic and Industrial Outlook ("Case (B): with electricity restriction")

If no nuclear power plants are restarted next summer, the electricity supply is expected to

be 5.4% short of demand on a kilowatt basis, even with electricity-saving measures taken in a manner to refrain from affecting economic activities. In order to eliminate the supply-demand gap, the reduction of production capacity utilization ratios and other electricity-saving measures to affect economic and industrial activities may have to be taken to cut electricity demand to a level lower than in "Case A without electricity restriction" and balance demand with supply. If companies reduce domestic production to save electricity consumption, they will give priority to domestic supply, cut exports, and shift their production operations overseas. In addition, fossil fuel imports for power generation may remain high next summer and thereafter with no nuclear power plants being restarted. Slack economic and industrial activity is projected to cause a corporate earnings decline, discouraging companies from implementing capital investment. Wide-ranging adverse effects may be imposed on the entire economy.

If electricity consumption is saved by 5.4% on a kilowatt basis through measures to affect economic activities, real GDP growth in FY2012 may be limited to 0.1% (1.8 percentage points or 9.1 trillion yen lower than in Case (A)). A production activity decline emerging from demand and supply constraints is projected to limit growth in the Index of Industrial Production to 1.6% (3.4 percentage points lower). As demand r for fossil fuel for power generation is projected to remain high, fossil fuel imports in FY2012 may reach 21.1 trillion yen, an increase of 4.6 trillion yen (including 3.3 trillion yen for power generation) from FY2010. Lower exports and higher imports may bring about a trade deficit of 4.7 trillion yen (down 6.4 trillion yen from a trade surplus in Case (A). Such slack economic and industrial activities are projected to negatively affect employment; unemployment at the end of FY2012 will increase by 100,000 people in comparison with Case (A).

2. OUTLOOK ON ENERGY SUPPLY AND DEMAND IN FY2011 AND FY2012

2-1 Outlook on Domestic Primary Energy Supply

Case (A): without electricity restriction

In FY2011, domestic primary energy supply is expected to decline 3.7% from the previous year due to a production plunge caused by the Great East Japan Earthquake and electricity savings amid a power supply capacity drop. Particularly, the disaster and electricity savings negatively affected industrial production, including vehicles, and private sector consumption, which had been recovering firmly since the previous year. In the second half of FY2011, domestic primary energy supply may slacken because of the continuation of electricity/energy-saving consciousness and a pull-back from the previous year’s high level attributable to severe winter weather.

Focusing on the supply of each energy source in FY2011, coal is projected to decline 0.9% from the previous year due to a drop in steel production and the damage to coal fired power plants.. Oil supply is projected to decline, owing to the pull-back from the previous year’s high level attributable to summer heat waves, an improvement of fuel efficiency in the transportation sector,

and a decrease in industrial demand caused by disaster damage and the fuel switch from oil. However, an oil supply increase for the expansion of oil fired power plants and private power generation amid a fall in the capacity utilization ratio for nuclear plants is projected to exceed the decline in the transportation and industrial sectors. As a result, overall oil supply in FY2011 is expected to increase 1.7% from the previous year. Natural gas supply is projected to expand 19.0% from the previous year as the capacity utilization ratio rises substantially for LNG fired power plants. Hydroelectricity supply is estimated to fall 2.8% despite a higher water flow rate because the Great East Japan Earthquake and torrential rains in Niigata and Fukushima Prefectures hit hydroelectric plants. Nuclear energy supply is projected to plunge 64.5% due to the disaster and a shutdown of nuclear power plants as requested by the government. As a result, fossil fuel consumption may increase substantially because of a fall in the capacity utilization ratio for nuclear power plants, leading energy-based carbon dioxide emissions in FY2011 to increase 2.1% from the previous year.

In FY2012, domestic primary energy supply is projected to rise 1.0% from the previous year as production and economic activities recover thanks to post-disaster reconstruction. Coal supply is expected to decline 1.8% from the previous year despite a steel production recovery as coal thermal power generation falls due to the restart of nuclear power plants. Oil supply is projected to decrease 5.1% due to a fall in supply for power generation because of the resumption of nuclear power plants, the fuel switch from oil in the industrial sector, and the fuel and transportation efficiency improvements in the transportation sector. Natural gas supply is predicted to fall 7.9% from the previous year despite the fuel switch from oil to town gas as supply for power generation declines. Nuclear energy supply is projected to shoot up 128.2% as nuclear power plants are expected to raise the overall capacity utilization ratio, even with new plants launching operation. As a result, CO2 emissions are expected to decline 5.3% as fossil fuel consumption falls substantially, owing to the restart of nuclear power plants.

Case (B): with electricity restriction

In FY2012, growth of domestic primary energy supply is projected to remain at the level of a 0.2% increase from the previous year (0.8 percentage points lower than in Case (A)) as production and economic activities slacken due to the summer electricity restriction. Although steel production is expected to remain unchanged from the previous year, coal supply is predicted to rise 4.1% due to the expansion of coal fired power generation. Oil supply is estimated to expand 4.7% due to the substantial rise in oil fired power generation despite the negative influence of the fuel switching in the industrial sector and the fuel and transportation efficiency improvements in the transportation sector. Natural gas supply is expected to increase 6.9% due to the fuel switch from oil to town gas and an increase in LNG fired power generation as well as coal and oil. Nuclear energy supply is estimated to plunge 99.9% as no nuclear power plants are assumed to be in operation from April. As a result, CO2 emissions are estimated to increase 5.5% as fossil fuel

consumption increases due to the shutdown of nuclear power plants.

2-2 Outlook on Final Energy Consumption

Case (A): without electricity restriction

In FY2011, final energy consumption is projected to decline 3.9% from the previous year. The industrial sector is expected to cut energy consumption by 3.1% from the previous year as a plunge in vehicle, steel, and other production in the first half cannot be offset by a recovery in the second half. The residential sector is projected to cut energy consumption by 5.2% due to electricity savings amid supply shortages and a pull-back from the previous year's high level attributable to summer heat waves. The commercial sector is projected to reduce energy consumption by 7.4% because of the pull-back from the previous year's high level attributable to summer heat waves, a decline in services operations in the aftermath of the disaster, and electricity-saving efforts. The transportation sector is projected to reduce energy consumption by 2.9% due to the pull-back from the previous year's high level attributable to summer heat waves, as well as the fuel efficiency improvements.

In FY2012, energy consumption is expected to increase in the industrial and commercial sectors as the economy recovers. The industrial sector is projected to expand energy consumption by 2.7% due to a recovery in general machinery and vehicle production. The residential sector is projected to cut energy consumption by 0.5%, owing to the continuation of strong energy-saving consciousness and the combination of a slightly cooler summer and a slightly warmer winter. The commercial sector is expected to increase energy consumption by 1.5% due to a services operation recovery despite ongoing energy-saving consciousness. The transportation sector is projected to cut energy consumption by 1.1% due to the improvements in fuel and transportation efficiency, despite a transportation demand increase amid an economic recovery. As a result, final energy consumption in FY2012 is projected to increase 1.1% from the previous year.

Case (B): with electricity restriction

In FY2012, final energy consumption is projected to decline from Case (A) due to slack production and economic activities under the summer electricity constraint. The industrial sector is projected to increase energy consumption by 0.6% as production recovers slightly from the disaster even amid the summer electricity constraint. The residential sector is estimated to reduce energy consumption by 0.9% thanks to stronger electricity-saving consciousness and the combination of a slightly cooler summer and a slightly warmer winter. The commercial sector is projected to expand energy consumption by 0.9% due to a recovery in services operations despite the stronger electricity-saving consciousness. The transportation sector is projected to cut energy consumption by 1.8% thanks to the fuel and transportation efficiency improvements. As a result, final energy consumption in FY2012 is expected to decrease by 0.2% from the previous year (1.3 percentage points lower than that in Case (A)).

2-3 Outlook on Energy Sales

(1) Electricity

Case (A): without electricity restriction

In FY2011, electricity sales (by electric power utilities) in Japan are projected to decline 5.3% from the previous year due to the production drop caused by the disaster in the first half, the order and request for the reduction of summer electricity consumption, and the pull-back from the previous year's high level attributable to summer heat waves.

In the residential sector, household electricity demand posted a substantial decline of 8.1% from the previous year due to growing electricity-saving consciousness, the diffusion of energy-saving electrical home appliances, and the pull-back from the previous year's high level attributable to summer heat waves. Household electricity demand in the second half is projected to decline 4.3% from the previous year thanks to a slightly warmer winter and the continuation of energy-saving consciousness. For the whole of FY2011, household electricity demand is projected to drop 6.1% from the previous year.

In the industrial sector, production plunged as the disaster damaged production facilities and supply chains. The sector raised the capacity utilization ratio for private power generation equipment to hold down electricity purchases in response to the electricity consumption restriction order and request. In the commercial sector, services operations slackened due to the pull-back from the previous year's high level attributable to summer heat waves. As a result, the power service demand, mainly consisting of the demand for the industrial and commercial sectors (total electricity sales minus lighting service demand), posted a substantial decline of 7.4% from the previous year in the first half of FY2011. Of power service demand, that from large industrial users decreased 4.5% due to the production plunge triggered by the disaster. In the second half of FY2011, power service demand is projected to decline 2.2% owing to the continuation of electricity-saving consciousness, despite the recovery in services operations in the commercial sector. Demand from large industrial users in the second half is projected to limit growth to 0.5% from the previous year. Power service demand in the whole of FY2011 is predicted to decrease 4.9% from the previous year. Of power service demand, that from large industrial users is projected to drop 2.1%.

In FY2012, household electricity demand is projected to limit growth to 1.8% from the previous year due to the continuation of electricity-saving consciousness despite the economic recovery. Power service demand is predicted to expand 3.4% because of the continuous recovery in production and services operations. Of power service demand, that from large industrial users is projected to increase 4.1% as production exceeds the pre-disaster level mainly for exports. As a result, electricity sales are projected to rise 2.8% from the previous year in FY2012.

"Case (B): with electricity restriction"

In FY2012, household electricity demand is projected to limit growth to 1.1% from the previous year due to slack economic activities under the summer electricity constraint and the enhancement of electricity-saving consciousness. Power service demand is projected to limit growth to 1.7% as the summer electricity constraint decelerates growth in production and economic activities. Demand from large industrial users is projected to reduce energy demand growth from Case (A) to a greater extent than in any other sector. Growth in such demand is estimated to be 1.7%. As a result, electricity sales are predicted to score a 1.5% increase from the previous year (1.3 percentage points lower than that in Case (A)).

(2) Town Gas

Case (A): without electricity restriction

In FY2011, town gas sales (by gas utilities) in Japan are projected to increase 0.3% from the previous year because positive factors, such as the fuel switch from oil to gas and an increase in fuel for private power generation, are greater than the negative factors, such as the slump in economic activities due to the disaster and the pull-back from the previous year's high level attributable to lower-than-usual spring temperatures and summer heat waves.

Town gas sales in the residential sector in the first half of FY2011 declined 2.1% from the previous year due to the impact of the disaster and the pull-back from the high level of the previous year attributable to lower-than-usual spring temperatures. In the second half, which includes gas demand seasons, heating and hot-water demand is expected to decline due to higher winter temperatures than in the previous year. Town gas sales in the residential sector for the whole of FY2011 are projected to decrease 1.3% from the previous year.

Town gas sales in the commercial sector and the "other" sector (including hospitals and public facilities) in the first half of FY2011 posted a substantial fall of 10.3% from the previous year due to the disaster-caused slump in services, the pull-back in air conditioning demand from the previous year's high level attributable to summer heat waves, and changes in preset air-conditioning temperatures under electricity-saving campaigns. Since air conditioning demand is expected to fall due to the warmer winter than in the previous year and the electricity-saving efforts predicted for the second half of FY2011, town gas sales for the whole FY2011 are forecast to decline 7.6% in the commercial sector and 7.8% in the "other" sector.

In the industrial sector, despite a sharp fall in production due to the disaster, town gas sales in the first half of FY2011 increased 3.5% from the previous year as a result of the fuel switch from oil and an increase in private power generation. Given a production recovery in the second half, town gas sales in the sector for the whole of FY2011 are projected to expand 4.7% from the previous year.

In FY2012, town gas sales in the residential sector are projected to fall 0.1% from the previous year due to the warmer winter than in the previous year, despite a steady increase in gas service contracts and the recovery from the disaster. Given the service recovery and sales promotion efforts, town gas sales are projected to increase 4.1% in the commercial sector and

4.1% in the "other" sector. In the industrial sector, town gas sales are predicted to increase 3.2% due to gas equipment's increased capacity utilization ratio thanks to the production increase amid a recovery from the disaster, as well as the fuel switch from oil to gas, despite a drop in private power generation after the previous year's expansion. As a result, Japan's town gas sales in FY2012 are projected to expand 2.5% from the previous year.

Case (B): with electricity restriction

In FY2012, town gas sales in the residential sector are expected to decline 0.6% from the previous year due to the growing energy-saving consciousness and the warmer winter than in the previous year. Given the moderate service recovery and the sales promotion efforts, town gas sales are projected to rise by 3.2% in the commercial sector and 3.7% in the other sector. Town gas sales in the industrial sector are projected to rise 1.4% thanks to the fuel switch from oil to gas, despite the production slump under the electricity constraint. As a result, town gas sales in Japan in FY2012 are projected to increase of 1.3% from the previous year (1.2 percentage points lower than that in Case (A)).

(3) Oil

Case (A): without electricity restriction

In FY2011, fuel oil sales are projected to fall just 0.1% from the previous year. The negative factors, such as the production plunge due to the disaster and the fall in auto fuel demand from the previous year's high level attributable to summer heat waves, are almost offset by positive factors, such as an increase in oil fired power plants and private power generation facility operations resulting from a decrease in the capacity utilization ratio for nuclear power plants.

Sales of gasoline, used mainly as automobile fuel, have basically followed a downtrend due to the fuel efficiency improvements and a decrease in travel distances. In addition, operations of car air conditioners in the first half of FY2011 fell due to a pull-back from the previous year's high level attributable to summer heat waves, and special expressway toll discounts expired. As a result, gasoline sales in the first half of FY2011 decreased 4.4% from the previous year. As the downtrend is expected to continue in the second half, gasoline sales for the whole of FY2011 are projected to decline 2.9%. Diesel oil sales have also followed a downtrend due to transportation and fuel efficiency improvements. Such trend was coupled with the pull-back from the higher year-before sales attributable to summer heat waves to push down diesel oil sales in the first half of FY2011 2.6% from the previous year. In the second half, diesel oil sales are projected to restore the level of the previous year as cargo traffic demand increases thanks to post-disaster reconstruction demand and the production recovery. Diesel oil sales in the whole of FY2011 are projected to drop 1.4% from the previous year.

Sales of naphtha, a raw material for petrochemical products, in the first half of FY2011 declined 2.1% from the previous year. As ethylene production in the second half is likely to level off

from the first half due to the yen's strength, naphtha sales in the whole of FY2011 are projected to decline 5.1%.

Kerosene sales in the first half of FY2011 posted a substantial decline of 16.8% from the previous year due to the switch from kerosene to electricity and town gas in the residential, commercial, and industrial sectors as well as the pull-back from the previous year's high level attributable to the lower-than-usual spring temperatures and the impact of the disaster. As heating and hot-water demand is expected to fall in the second half as the kerosene demand season, for which a warmer winter than in the previous year is assumed, kerosene sales in the whole of FY2011 are projected to decline 6.9%.

Fuel oil A sales in the first half of FY2011 logged a substantial fall of 9.8% from the previous year. As the downtrend is expected to continue despite the production recovery in the second half, fuel oil A sales in the whole of FY2011 are projected to drop 6.1% from the previous year.

Fuel oil C sales for power generation in the first half of FY2011 jumped 37.6% from the previous year thanks to an increase in the operation of oil fired power plants resulting from a decrease in the operation of nuclear power plants due to the disaster. As the operation of oil fired power plants is expected to increase further in the second half, fuel oil C sales for power generation in the whole of FY2011 are projected to expand 104.3% from the previous year. Fuel oil C sales for other uses (including industrial and shipping uses) in the first half of FY2011 posted a large fall of 10.8% from the previous year, owing to a plunge in production and transportation, and the conspicuous fuel switch to town gas in the industrial sector. As the downtrend is expected to continue despite the production recovery in the second half, fuel oil C sales for other uses in the whole of FY2011 are projected to decline 7.9% from the previous year.

In FY2012, gasoline sales are projected to fall 1.5% from the previous year thanks to the fuel efficiency improvements due to the diffusion of eco-friendly vehicles and the shift to fuel-efficient minivehicles, as well as the termination of special expressway toll discounts. Diesel oil sales are forecast to decrease 1.4% due to the transportation and fuel efficiency improvements while cargo transportation demand recovers thanks to the post-disaster reconstruction demand and the production rally. Naphtha sales are projected to increase 2.7% in line with growth in ethylene production. Kerosene sales are projected to decline 3.9% despite an increase in demand due to the economic recovery, the ongoing fuel switch to electricity and town gas in the residential, commercial, and industrial sectors. Fuel oil A sales are projected to drop 2.6% due to the fuel switch to town gas while the production and transport demand recover. Fuel oil C sales for power generation in FY2012 are projected to drop 37.9% from the previous year due to an increase in the operation of nuclear power plants. Fuel oil C sales for other uses are projected to decline 4.8% due to the fuel switch along with fuel oil A. Given all these factors, overall fuel oil sales in FY2012 are projected to decrease 3.9% from the previous year.

LPG sales in FY2011 are expected to fall 5.4% from the previous year due to the impact

of the disaster. In FY2012, LPG sales are projected to grow 1.8% from the previous year thanks to the substantial increase in sales of LPG as chemical material.

Case (B): with electricity restriction

In FY2012, gasoline sales are projected to fall 1.9% from the previous year because of the economic slowdown under the electricity constraint, the fuel efficiency improvements due to the diffusion of eco-friendly vehicles and a shift to fuel-efficient minivehicles, and the termination of special expressway toll discounts. Diesel oil sales are projected to decrease 2.7% because of the improvement in transportation and fuel efficiency and the limited recovery of cargo transportation demand due to the economic slump under the summer electricity constraint. Naphtha sales are projected to decrease 0.5% despite growth in ethylene production because the share of LPG in the materials of ethylene increased from the second half of the previous year. Kerosene sales are expected to decline 4.3% as the fuel switch to electricity and town gas makes progress in the residential, commercial, and industrial sectors. Fuel oil A sales are projected to drop 3.3% as the fuel switch to town gas coincides with the production and transportation slump under the summer electricity constraint. Fuel oil C sales for power generation are projected to expand 48.3% from the previous year in the absence of nuclear power plants in operation. Fuel oil C sales for other uses are projected to decline 5.4% due to the fuel switch along with fuel oil A. Given all these factors, toverall fuel oil sales in FY2012 are projected to increase 1.8% from the previous year (5.7 percentage points more than in Case (A). When excluding sales for power generation, 1.3 percentage points lower than in Case (A)).

LPG sales are forecast to increase 1.0% due to an increase in sales of LPG as a chemical material.

3. EVALUATING POSSIBLE IMPACTS OF FACTORS AFFECTING ENERGY SUPPLY/DEMAND IN FY2012

In order to evaluate impacts of the factors affecting energy supply and demand, we have conducted a sensitivity analysis on our forecasts for FY2012. In a sensitivity analysis, we analyze the influence of a change in only one of the assumptions (exogenous variables) quantitatively by comparing the outputs (forecasts) of both the base case and a case with the changed assumption. In this report, we analyzed the possible impacts of ambient temperature changes, which tend to affect energy demand.

3-1 Impacts of Ambient Temperature Changes

Energy demand is sensitive to ambient temperature changes. Particularly, air conditioning and water heating demand in the residential and commercial sectors are conspicuously sensitive. As the recent years have seen wild temperature fluctuations due to record summer heat waves and warm winter weather, needs have grown for the evaluation of ambient temperature changes'

impacts on energy demand. The average temperatures for the past 10 years are assumed as the base case here. In our sensitivity analysis, we evaluate impacts of a 1° C temperature change on energy supply and demand in the summer (July–September) and winter (January–March) seasons that are vulnerable to temperature changes.

(1) 1° C rise in summer (July-September)

If the mean ambient temperature in summer is 1° C higher than the average-year level, the annual domestic primary energy supply will increase 0.3% from the base case, and final energy consumption will increase 0.2%. In the residential sector, an increase in air-conditioning demand will be greater than a decrease in water heating demand due to the temperature rise, resulting in a 0.2% rise in energy consumption. In the commercial sector, which features greater air conditioning demand and less water heating demand than the residential sector, energy consumption will expand 0.8%, receiving a greater impact than the residential sector. In the transportation sector, where fuel efficiency declines due to an increase in vehicle air conditioning demand, energy consumption will increase 0.2%. Among energy sales, the electricity sales will rise 0.6% because of an air conditioning demand increase. A town gas sales rise will be increase by just 0.2% as a fall in water heating demand in the residential and commercial sectors almost offsets an increase in air conditioning demand mainly in the commercial sector. Fuel oil sales will increase 0.3%, owing to a rise in gasoline consumption for vehicles and in fuel oil C consumption for power generation amid an electricity demand expansion.

While the electricity demand increase emerging from temperature changes could surpass any supply increase, we did not take such a situation into account for this evaluation. If the mean ambient temperature in summer is 1° C higher in Case (B)," electricity demand may increase 2.4% on a kilowatt-hour basis. Peak electricity demand may rise 3.6% on a kilowatt-hour basis. In such event, additional electricity-saving measures, including patience, as well as a further fall in economic and production activities, may be unavoidable.

(2) 1° C fall in winter (January–March)

If the mean ambient temperature in winter (January to March) is 1° C lower than the average-year level, annual domestic primary energy supply will increase 0.3% from the base case. Final energy consumption will also increase 0.3%**.** As a temperature fall causes a heating demand rise and a water temperature fall triggers a water heating demand rise in the residential and commercial sector, energy consumption will increase 1.1% in the residential sector and 0.6% in the commercial sector. Among energy sales, the electricity sales will increase 0.4 percent due to the growing heating demand. Fuel oil sales will also rise 0.3%. Town gas sales will expand 0.6% thanks to growth in heating and hot-water demand. LPG sales will also rise 0.6% because of the same factor. Town gas and LPG sales will thus receive greater impacts than other energy sources.

If the mean ambient temperature in winter is 1° C lower than the average-year level in

Case (B), electricity demand will increase 1.4% on a kilowatt-hour basis, with the maximum demand expanding 2.0% on a kilowatt basis. Such changes could affect the electricity supply-demand balance.

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Table 1-1 Overview (Case (A) without electricity restriction)

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012
		(Actual)	1st half	2nd half	Total	1st half	2nd half	Total	(Forecast)
Key economic indicators	GDP	**495,417**	**252,961**	**258,031**	**510,992**	**249,895**	**259,335**	**509,230**	**519,012**
	(Chained to year 2005, in billions of yen)	(-2.1)	(4.9)	(1.5)	(3.1)	(-1.2)	(0.5)	(-0.3)	(1.9)
	Private demand	**364,657**	**187,200**	**188,475**	**375,675**	**185,736**	**189,268**	**375,003**	**379,730**
		[-3.1]			[2.2]			[-0.2]	[1.1]
	Public demand	**118,037**	**57,189**	**61,514**	**118,704**	**58,226**	**63,563**	**121,789**	**124,453**
		[0.9]			[0.1]			[0.6]	[0.6]
	External demand	**11,673**	**8,635**	**8,189**	**16,825**	**6,240**	**6,973**	**13,214**	**14,839**
		[0.2]			[0.8]			[-0.8]	[0.1]
	Domestic corporate goods price index	**102.6**	**102.9**	**103.7**	**103.3**	**105.6**	**105.5**	**105.5**	**105.9**
	(100 for 2005)	(-5.2)	(0.1)	(1.4)	(0.7)	(2.6)	(1.8)	(2.2)	(0.4)
	Consumer price index	**100.5**	**100.0**	**99.8**	**99.9**	**99.8**	**99.4**	**99.6**	**99.2**
	(100 for 2010)	(-1.5)	(-0.9)	(-0.4)	(-0.6)	(-0.2)	(-0.3)	(-0.2)	(-0.4)
	Index of industrial production	**86.1**	**94.6**	**93.1**	**93.9**	**90.3**	**94.2**	**92.3**	**96.9**
	(100 for 2005)	(-8.8)	(17.4)	(1.7)	(9.1)	(-4.5)	(1.2)	(-1.7)	(5.0)
	Crude steel production	**96,449**	**55,424**	**55,369**	**110,792**	**53,312**	**54,265**	**107,576**	**110,550**
	(1,000 tons)	(-8.6)	(27.9)	(4.2)	(14.9)	(-3.8)	(-2.0)	(-2.9)	(2.8)
	Ethylene production	**7,219**	**3,327**	**3,671**	**6,999**	**3,293**	**3,384**	**6,677**	**6,942**
	(1,000 tons)	(10.7)	(-5.3)	(-0.9)	(-3.0)	(-1.0)	(-7.8)	(-4.6)	(4.0)
	Exchange rate	**92.8**	**88.9**	**82.5**	**85.7**	**79.8**	**77.5**	**78.6**	**77.5**
	(Yen/US$)	(-7.6)	(-6.8)	(-8.6)	(-7.7)	(-10.3)	(-6.0)	(-8.2)	(-1.4)
	Crude oil CIF price	**68.9**	**78.6**	**89.5**	**84.0**	**114.0**	**110.0**	**112.0**	**110.0**
	(US$/Bbl)	(-23.5)	(27.5)	(17.4)	(21.9)	(45.0)	(23.0)	(33.3)	(-1.8)
	Heating degree-days	**952**	**77**	**998**	**1,075**	**53**	**946**	**999**	**980**
		(6.1)	(122.4)	(8.8)	(12.9)	(-31.1)	(-5.2)	(-7.1)	(-1.9)
	Cooling degree-days	**329**	**560**	**0**	**560**	**472**	**2**	**474**	**425**
		(-17.5)	(70.6)	(-75.0)	(70.5)	(-15.7)	(1600.0)	(-15.4)	(-10.4)
Key energy indicators	Primary energy supply	**491,315**	**250,850**	**262,902**	**513,752**	**236,308**	**258,561**	**494,869**	**500,063**
	(10^10kcal = KTOE)	(-4.0)	(8.5)	(1.1)	(4.6)	(-5.8)	(-1.7)	(-3.7)	(1.0)
	Final energy consumption	**331,043**	**164,813**	**177,925**	**342,738**	**155,468**	**173,874**	**329,342**	**332,895**
	(10^10kcal = KTOE)	(-2.4)	(7.1)	(0.4)	(3.5)	(-5.7)	(-2.3)	(-3.9)	(1.1)
	Industrial sector	**155,327**	**78,625**	**82,480**	**161,105**	**75,375**	**80,816**	**156,191**	**160,339**
		(-3.2)	(8.3)	(-0.3)	(3.7)	(-4.1)	(-2.0)	(-3.1)	(2.7)
	Residential/commercial sector	**92,901**	**43,574**	**54,468**	**98,042**	**39,658**	**52,319**	**91,976**	**92,309**
		(-1.7)	(9.0)	(2.9)	(5.5)	(-9.0)	(-3.9)	(-6.2)	(0.4)
	Transportation sector	**82,815**	**42,614**	**40,977**	**83,591**	**40,435**	**40,739**	**81,174**	**80,247**
		(-1.7)	(3.3)	(-1.4)	(0.9)	(-5.1)	(-0.6)	(-2.9)	(-1.1)
	Electricity sales	**889.4**	**476.0**	**466.1**	**942.1**	**439.7**	**452.6**	**892.3**	**917.7**
	(billion kWh)	(-3.4)	(9.1)	(2.9)	(5.9)	(-7.6)	(-2.9)	(-5.3)	(2.8)
	Town gas sales	**33,837**	**16,574**	**18,710**	**35,283**	**16,380**	**18,995**	**35,375**	**36,252**
	(million m^3/10,000kcal)	(-1.9)	(8.3)	(0.9)	(4.3)	(-1.2)	(1.5)	(0.3)	(2.5)
	Fuel oil sales	**195,122**	**92,031**	**103,917**	**195,948**	**88,605**	**107,174**	**195,779**	**188,199**
	(1,000 kl)	(-3.0)	(2.4)	(-1.3)	(0.4)	(-3.7)	(3.1)	(-0.1)	(-3.9)
	CO_2 emissions (energy-based)	**1,075**			**1,122**			**1,146**	**1,086**
	(milion t.-C)	(-5.5)			(4.3)			(2.1)	(-5.3)
	(100 for FY1990)	**101.5**			**105.9**			**108.2**	**102.5**

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

1. Figures in parentheses indicate year-to-year percentage changes, except contributions to GDP growth.
2. Contributions to GDP growth may not add up to the total due to minor data deviations.
3. Industrial sector consumption includes non-energy uses.

Table 1-2 Overview (Case (B) with electricity restriction)

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012
		(Actual)	1st half	2nd half	Total	1st half	2nd half	Total	(Forecast)
Key economic indicators	GDP	**495,417**	**252,961**	**258,031**	**510,992**	**249,895**	**259,335**	**509,230**	**509,957**
	(Chained to year 2005, in billions of yen)	(-2.1)	(4.9)	(1.5)	(3.1)	(-1.2)	(0.5)	(-0.3)	(0.1)
	Private demand	**364,657**	**187,200**	**188,475**	**375,675**	**185,736**	**189,268**	**375,003**	**378,040**
		[-3.1]			[2.2]			[-0.2]	[0.7]
	Public demand	**118,037**	**57,189**	**61,514**	**118,704**	**58,226**	**63,563**	**121,789**	**124,441**
		[0.9]			[0.1]			[0.6]	[0.6]
	External demand	**11,673**	**8,635**	**8,189**	**16,825**	**6,240**	**6,973**	**13,214**	**7,878**
		[0.2]			[0.8]			[-0.8]	[-1.1]
	Domestic corporate goods price index	**102.6**	**102.9**	**103.7**	**103.3**	**105.6**	**105.5**	**105.5**	**105.8**
	(100 for 2005)	(-5.2)	(0.1)	(1.4)	(0.7)	(2.6)	(1.8)	(2.2)	(0.3)
	Consumer price index	**100.5**	**100.0**	**99.8**	**99.9**	**99.8**	**99.4**	**99.6**	**99.2**
	(100 for 2010)	(-1.5)	(-0.9)	(-0.4)	(-0.6)	(-0.2)	(-0.3)	(-0.2)	(-0.4)
	Index of industrial production	**86.1**	**94.6**	**93.1**	**93.9**	**90.3**	**94.2**	**92.3**	**93.8**
	(100 for 2005)	(-8.8)	(17.4)	(1.7)	(9.1)	(-4.5)	(1.2)	(-1.7)	(1.6)
	Crude steel production	**96,449**	**55,424**	**55,369**	**110,792**	**53,312**	**54,265**	**107,576**	**108,191**
	(1,000 tons)	(-8.6)	(27.9)	(4.2)	(14.9)	(-3.8)	(-2.0)	(-2.9)	(0.6)
	Ethylene production	**7,219**	**3,327**	**3,671**	**6,999**	**3,293**	**3,384**	**6,677**	**6,692**
	(1,000 tons)	(10.7)	(-5.3)	(-0.9)	(-3.0)	(-1.0)	(-7.8)	(-4.6)	(0.2)
	Exchange rate	**92.8**	**88.9**	**82.5**	**85.7**	**79.8**	**77.5**	**78.6**	**77.5**
	(Yen/US$)	(-7.6)	(-6.8)	(-8.6)	(-7.7)	(-10.3)	(-6.0)	(-8.2)	(-1.4)
	Crude oil CIF price	**68.9**	**78.6**	**89.5**	**84.0**	**114.0**	**110.0**	**112.0**	**110.0**
	(US$/Bbl)	(-23.5)	(27.5)	(17.4)	(21.9)	(45.0)	(23.0)	(33.3)	(-1.8)
	Heating degree-days	**952**	**77**	**998**	**1,075**	**53**	**946**	**999**	**980**
		(6.1)	(122.4)	(8.8)	(12.9)	(-31.1)	(-5.2)	(-7.1)	(-1.9)
	Cooling degree-days	**329**	**560**	**0**	**560**	**472**	**2**	**474**	**425**
		(-17.5)	(70.6)	(-75.0)	(70.5)	(-15.7)	(1600.0)	(-15.4)	(-10.4)
Key energy indicators	Primary energy supply	**491,315**	**250,850**	**262,902**	**513,752**	**236,308**	**258,561**	**494,869**	**495,824**
	(10^10kcal = KTOE)	(-4.0)	(8.5)	(1.1)	(4.6)	(-5.8)	(-1.7)	(-3.7)	(0.2)
	Final energy consumption	**331,043**	**164,813**	**177,925**	**342,738**	**155,468**	**173,874**	**329,342**	**328,734**
	(10^10kcal = KTOE)	(-2.4)	(7.1)	(0.4)	(3.5)	(-5.7)	(-2.3)	(-3.9)	(-0.2)
	Industrial sector	**155,327**	**78,625**	**82,480**	**161,105**	**75,375**	**80,816**	**156,191**	**157,168**
		(-3.2)	(8.3)	(-0.3)	(3.7)	(-4.1)	(-2.0)	(-3.1)	(0.6)
	Residential/commercial sector	**92,901**	**43,574**	**54,468**	**98,042**	**39,658**	**52,319**	**91,976**	**91,854**
		(-1.7)	(9.0)	(2.9)	(5.5)	(-9.0)	(-3.9)	(-6.2)	(-0.1)
	Transportation sector	**82,815**	**42,614**	**40,977**	**83,591**	**40,435**	**40,739**	**81,174**	**79,712**
		(-1.7)	(3.3)	(-1.4)	(0.9)	(-5.1)	(-0.6)	(-2.9)	(-1.8)
	Electricity sales	**889.4**	**476.0**	**466.1**	**942.1**	**439.7**	**452.6**	**892.3**	**905.5**
	(billion kWh)	(-3.4)	(9.1)	(2.9)	(5.9)	(-7.6)	(-2.9)	(-5.3)	(1.5)
	Town gas sales	**33,837**	**16,574**	**18,710**	**35,283**	**16,380**	**18,995**	**35,375**	**35,828**
	(million m^3/10,000kcal)	(-1.9)	(8.3)	(0.9)	(4.3)	(-1.2)	(1.5)	(0.3)	(1.3)
	Fuel oil sales	**195,122**	**92,031**	**103,917**	**195,948**	**88,605**	**107,174**	**195,779**	**199,380**
	(1,000 kl)	(-3.0)	(2.4)	(-1.3)	(0.4)	(-3.7)	(3.1)	(-0.1)	(1.8)
	CO_2 emissions (energy-based)	**1,075**			**1,122**			**1,146**	**1,209**
	(milion t.-C)	(-5.5)			(4.3)			(2.1)	(5.5)
	(100 for FY1990)	**101.5**			**105.9**			**108.2**	**114.1**

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

1. Figures in parentheses indicate year-to-year percentage changes, except contributions to GDP growth.
2. Contributions to GDP growth may not add up to the total due to minor data deviations.
3. Industrial sector consumption includes non-energy uses.

Table 2 Macroeconomic Outlook (Case (A) without electricity restriction)

	FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012
	(Actual)	1H	2H	Total	1H	2H	Total	(Forecast)
Real GDP (Chained to Year 2005, in billion yen)	**495,417** (-2.1)	**252,961** (4.9)	**258,031** (1.5)	**510,992** (3.1)	**249,895** (-1.2)	**259,335** (0.5)	**509,230** (-0.3)	**519,012** (1.9)
Private demand	**364,657** (-4.0)	**187,200** (3.9)	**188,475** (2.1)	**375,675** (3.0)	**185,736** (-0.8)	**189,268** (0.4)	**375,003** (-0.2)	**379,730** (1.3)
Private consumption	**295,021** (1.2)	**148,843** (2.6)	**150,834** (0.6)	**299,677** (1.6)	**148,834** (-0.0)	**151,476** (0.4)	**300,310** (0.2)	**302,247** (0.6)
Private residential investment	**12,268** (-21.0)	**6,090** (-2.9)	**6,462** (7.8)	**12,552** (2.3)	**6,427** (5.5)	**6,764** (4.7)	**13,191** (5.1)	**13,856** (5.0)
Private nonresidential investment	**62,560** (-12.0)	**31,315** (3.9)	**33,441** (3.2)	**64,756** (3.5)	**30,691** (-2.0)	**33,290** (-0.5)	**63,980** (-1.2)	**66,105** (3.3)
Public demand	**118,037** (4.2)	**57,189** (1.8)	**61,514** (-0.5)	**118,704** (0.6)	**58,226** (1.8)	**63,563** (3.3)	**121,789** (2.6)	**124,453** (2.2)
Government consumption	**95,942** (2.7)	**48,452** (2.4)	**49,719** (2.2)	**98,171** (2.3)	**49,360** (1.9)	**50,555** (1.7)	**99,915** (1.8)	**100,948** (1.0)
Public investment	**22,124** (11.5)	**8,810** (-1.4)	**11,817** (-10.4)	**20,627** (-6.8)	**8,858** (0.5)	**13,029** (10.3)	**21,888** (6.1)	**23,519** (7.5)
Net exports of goods & services	**11,673** (-4.8)	**8,635** (103.0)	**8,189** (10.4)	**16,825** (44.1)	**6,240** (-27.7)	**6,973** (-14.8)	**13,214** (-21.5)	**14,839** (12.3)
Exports of goods & services	**71,286** (-9.8)	**41,431** (25.7)	**42,135** (10.0)	**83,566** (17.2)	**40,508** (-2.2)	**42,815** (1.6)	**83,324** (-0.3)	**87,770** (5.3)
Imports of goods & services	**59,613** (-10.7)	**32,795** (14.2)	**33,946** (9.9)	**66,741** (12.0)	**34,268** (4.5)	**35,842** (5.6)	**70,110** (5.0)	**72,931** (4.0)
Nominal GDP (billion yen)	**473,859** (-3.2)	**238,125** (2.8)	**241,080** (-0.5)	**479,205** (1.1)	**229,880** (-3.5)	**238,019** (-1.3)	**467,899** (-2.4)	**475,904** (1.7)
Industrial production index (100 for 2005)	**86.1** (-8.8)	**94.6** (17.4)	**93.1** (1.7)	**93.9** (9.1)	**90.3** (-4.5)	**94.2** (1.2)	**92.3** (-1.7)	**96.9** (5.0)
Tertiary industry activity index (100 for 2005)	**96.7** (-3.4)	**97.5** (1.6)	**98.2** (0.8)	**97.8** (1.2)	**97.2** (-0.3)	**99.3** (1.1)	**98.2** (0.4)	**99.4** (1.2)
Domestic corporate goods price index (100 for 2005)	**102.6** (-5.2)	**102.9** (0.1)	**103.7** (1.4)	**103.3** (0.7)	**105.6** (2.6)	**105.5** (1.8)	**105.5** (2.2)	**105.9** (0.4)
Consumer price index (100 for 2005)	**100.5** (-1.5)	**100.0** (-0.9)	**99.8** (-0.4)	**99.9** (-0.6)	**99.8** (-0.2)	**99.4** (-0.3)	**99.6** (-0.2)	**99.2** (-0.4)
Exchange rate (Yen/US$)	**92.8** (-7.6)	**88.9** (-6.8)	**82.5** (-8.6)	**85.7** (-7.7)	**79.8** (-10.3)	**77.5** (-6.0)	**78.6** (-8.2)	**77.5** (-1.4)
Crude oil CIF price (US$/Bbl)	**68.9** (-23.5)	**78.6** (27.5)	**89.5** (17.4)	**84.0** (21.9)	**114.0** (45.0)	**110.0** (23.0)	**112.0** (33.3)	**110.0** (-1.8)

Sources: Actual results data prepared from various publications, forecasts by IEEJ

Notes:

1. Bracketed figures indicate year-to-year percentage changes.
2. GDP components may not add up to the total GDP due to minor data deviations.

Table 3 Outlook on Industrial Activities (Case (A) without electricity restriction)

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012
		(Actual)	1H	2H	Total	1H	2H	Total	(Forecast)
Production (1,000 tons)	Crude steel	**96,449** (-8.6)	**55,424** (27.9)	**55,369** (4.2)	**110,792** (14.9)	**53,312** (-3.8)	**54,265** (-2.0)	**107,576** (-2.9)	**110,550** (2.8)
	Ethylene	**7,219** (10.7)	**3,327** (-5.3)	**3,671** (-0.9)	**6,999** (-3.0)	**3,293** (-1.0)	**3,384** (-7.8)	**6,677** (-4.6)	**6,942** (4.0)
	Cement	**58,378** (-11.4)	**27,194** (-5.4)	**28,857** (-2.6)	**56,051** (-4.0)	**27,263** (0.3)	**29,648** (2.7)	**56,911** (1.5)	**57,906** (1.7)
	Paper/paperboard	**26,892** (-6.8)	**13,755** (3.2)	**13,587** (0.2)	**27,341** (1.7)	**13,047** (-5.1)	**13,523** (-0.5)	**26,570** (-2.8)	**27,604** (3.9)
	Automobiles (1,000 unit)	**8,865** (-11.4)	**4,787** (24.1)	**4,207** (-16.0)	**8,994** (1.5)	**3,902** (-18.5)	**5,050** (20.0)	**8,952** (-0.5)	**9,649** (7.8)
Industrial production index (100 for 2005)	Foods	**102.5** (1.8)	**107.5** (1.1)	**95.9** (-2.9)	**101.7** (-0.8)	**104.3** (-3.0)	**97.0** (1.1)	**100.6** (-1.1)	**102.1** (1.5)
	Textiles (excl. chemical fibers)	**66.8** (-14.4)	**66.4** (-0.5)	**67.7** (1.2)	**67.1** (0.3)	**66.4** (-0.1)	**64.9** (-4.1)	**65.6** (-2.1)	**64.5** (-1.7)
	Iron & steel	**81.0** (-11.1)	**94.4** (32.0)	**94.1** (4.0)	**94.2** (16.4)	**89.7** (-5.0)	**90.6** (-3.7)	**90.2** (-4.3)	**93.6** (3.8)
	Chemicals (incl. chemical fibers)	**97.8** (2.9)	**98.0** (3.2)	**100.2** (-0.4)	**99.1** (1.3)	**97.5** (-0.5)	**97.3** (-2.9)	**97.4** (-1.7)	**99.5** (2.2)
	Ceramics, stone and clay products	**80.1** (-11.3)	**84.3** (11.1)	**86.9** (3.0)	**85.6** (6.8)	**82.3** (-2.3)	**87.7** (1.0)	**85.0** (-0.7)	**87.7** (3.2)
	Paper/pulp	**87.7** (-6.8)	**89.4** (2.8)	**88.5** (0.1)	**88.9** (1.4)	**84.3** (-5.7)	**87.6** (-1.0)	**85.9** (-3.3)	**89.9** (4.6)
	Nonferrous metals	**84.0** (-5.3)	**89.9** (14.5)	**88.8** (-0.7)	**89.3** (6.4)	**84.5** (-6.0)	**88.1** (-0.7)	**86.3** (-3.4)	**90.2** (4.5)
	Transportation machinery	**84.3** (-11.0)	**94.0** (28.3)	**86.1** (-9.8)	**90.0** (6.7)	**80.2** (-14.7)	**97.0** (12.7)	**88.6** (-1.6)	**96.6** (9.0)
	Electrical machinery and others	**82.5** (-13.0)	**95.9** (25.8)	**96.8** (9.0)	**96.3** (16.7)	**93.9** (-2.1)	**97.9** (1.2)	**95.9** (-0.4)	**100.6** (4.9)
	Industrial production total	**86.1** (-8.8)	**94.6** (17.4)	**93.1** (1.7)	**93.9** (9.1)	**90.3** (-4.5)	**94.2** (1.2)	**92.3** (-1.7)	**96.9** (5.0)

Sources: Actual results data prepared from various publications, forecasts by IEEJ

Notes:

1. Bracketed figures indicate year-to-year percentage changes.
2. "General and electrical machinery" covers general machinery, electrical machinery, information and telecommunications equipment, electronic parts and devices, precision machinery and metal products.

Table 4 Outlook on Electricity Demand (Electric power utilities, by use)

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)	
		(Actual)	1H	2H	Total	1H	2H	Total	Without restriction	With restriction
Electricity demand (billion kWh)	Household demand	**285.0** (-0.1)	**146.2** (10.2)	**158.1** (3.7)	**304.2** (6.8)	**134.3** (-8.1)	**151.3** (-4.3)	**285.6** (-6.1)	**290.7** (1.8)	**288.7** (1.1)
	Industrial demand (incl. specified scale demand)	**604.4** (-4.9)	**329.8** (8.6)	**308.0** (2.4)	**637.9** (5.5)	**305.5** (-7.4)	**301.2** (-2.2)	**606.7** (-4.9)	**627.0** (3.4)	**616.9** (1.7)
	Total (incl. specified scale demand)	**889.4** (-3.4)	**476.0** (9.1)	**466.1** (2.9)	**942.1** (5.9)	**439.7** (-7.6)	**452.6** (-2.9)	**892.3** (-5.3)	**917.7** (2.8)	**905.5** (1.5)
	(Regrouped) Large-scale industrial users	**280.9** (-6.3)	**153.9** (11.4)	**146.3** (2.5)	**300.2** (6.9)	**146.9** (-4.5)	**147.0** (0.5)	**293.9** (-2.1)	**306.1** (4.1)	**299.0** (1.7)
	Chemicals	**26.7** (-10.9)	**14.2** (10.0)	**13.9** (0.7)	**28.1** (5.2)	**13.8** (-3.0)	**13.6** (-2.3)	**27.4** (-2.7)	**28.3** (3.4)	**27.8** (1.7)
	Iron & steel	**46.3** (-9.7)	**26.5** (22.9)	**26.8** (8.5)	**53.3** (15.2)	**26.4** (-0.5)	**26.8** (-0.0)	**53.2** (-0.3)	**54.6** (2.7)	**53.3** (0.2)
	Machinery	**69.5** (-8.8)	**38.7** (13.6)	**35.8** (1.2)	**74.6** (7.3)	**36.2** (-6.6)	**37.0** (3.4)	**73.2** (-1.8)	**77.7** (6.1)	**74.7** (2.0)
	Total	**232.1** (-7.5)	**128.5** (13.4)	**122.9** (3.4)	**251.3** (8.3)	**123.6** (-3.8)	**123.7** (0.7)	**247.3** (-1.6)	**257.5** (4.1)	**250.5** (1.3)

Sources: Actual results data prepared from METI's "Monthly Electricity Survey and Statistics," forecasts by IEEJ

Notes:

1. Bracketed figures indicate year-to-year percentage changes.

2. The data include specified supplies by electric power utilities and exclude captive consumption. But captive consumption at Tobata Co-operative Thermal Power Company, Inc. and Oita Co-operative Thermal Power Company, Inc. is treated as specified supplies.

3. We estimated demand in and after FY2010 in accordance with the categorization before an institutional change to secure the continuity of the statistics.

Table 5 Outlook on Town Gas Sales (by gas utilities)

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)	
		(Actual)	1H	2H	Total	1H	2H	Total	Without restriction	With restriction
Town gas sales (million m^3)	Household	**9,629** (-0.2)	**3,806** (3.0)	**5,985** (0.9)	**9,791** (1.7)	**3,727** (-2.1)	**5,933** (-0.9)	**9,660** (-1.3)	**9,648** (-0.1)	**9,605** (-0.6)
	Commercial	**4,616** (-3.0)	**2,480** (5.0)	**2,258** (0.2)	**4,739** (2.7)	**2,226** (-10.3)	**2,154** (-4.6)	**4,380** (-7.6)	**4,561** (4.1)	**4,521** (3.2)
	Industrial	**16,707** (-3.1)	**8,733** (11.0)	**8,896** (0.7)	**17,628** (5.5)	**9,036** (3.5)	**9,417** (5.9)	**18,452** (4.7)	**19,041** (3.2)	**18,713** (1.4)
	Others	**2,886** (1.2)	**1,555** (13.2)	**1,571** (3.8)	**3,125** (8.3)	**1,392** (-10.5)	**1,491** (-5.0)	**2,883** (-7.8)	**3,002** (4.1)	**2,989** (3.7)
	Total	**33,837** (-1.9)	**16,574** (8.3)	**18,710** (0.9)	**35,283** (4.3)	**16,380** (-1.2)	**18,995** (1.5)	**35,375** (0.3)	**36,252** (2.5)	**35,828** (1.3)

Sources: Actual results data prepared from METI's "Monthly Gas Industry Statistics," forecast by IEEJ

Notes:

1. Bracketed figures indicate year-to-year percentage changes.

2. Converted at 2. $1m^3$=41.8605MJ (10,000kcal)

Table 6 Outlook on Fuel Oil Sales

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)	
		(Actual)	1H	2H	Total	1H	2H	Total	Without restriction	With restriction
Fuel oil sales (1,000 kl)	Gasoline	**57,597** (0.2)	**29,841** (2.5)	**28,356** (-0.5)	**58,197** (1.0)	**28,537** (-4.4)	**27,952** (-1.4)	**56,489** (-2.9)	**55,627** (-1.5)	**55,398** (-1.9)
	Naphtha	**47,320** (10.4)	**22,138** (-0.7)	**24,529** (-2.0)	**46,668** (-1.4)	**21,672** (-2.1)	**22,597** (-7.9)	**44,268** (-5.1)	**45,444** (2.7)	**44,057** (-0.5)
	Jet fuel	**5,283** (-6.9)	**2,778** (7.4)	**2,376** (-11.9)	**5,154** (-2.4)	**2,173** (-21.8)	**2,493** (4.9)	**4,666** (-9.5)	**4,724** (1.3)	**4,703** (0.8)
	Kerosene	**20,057** (-1.0)	**5,494** (10.7)	**14,838** (-1.7)	**20,332** (1.4)	**4,572** (-16.8)	**14,353** (-3.3)	**18,925** (-6.9)	**18,181** (-3.9)	**18,069** (-4.5)
	Diesel oil	**32,388** (-4.0)	**16,253** (4.0)	**16,611** (-0.9)	**32,864** (1.5)	**15,824** (-2.6)	**16,579** (-0.2)	**32,403** (-1.4)	**31,940** (-1.4)	**31,522** (-2.7)
	Fuel oil A	**16,043** (-10.3)	**6,712** (-3.3)	**8,693** (-4.5)	**15,404** (-4.0)	**6,055** (-9.8)	**8,407** (-3.3)	**14,462** (-6.1)	**14,082** (-2.6)	**13,981** (-3.3)
	Fuel oil B/C	**16,434** (-29.0)	**8,816** (5.5)	**8,515** (5.4)	**17,330** (5.5)	**9,772** (10.8)	**14,794** (73.7)	**24,566** (41.7)	**18,201** (-25.9)	**31,650** (28.8)
	For power generation	**7,378** (-42.5)	**3,944** (-3.2)	**3,724** (12.7)	**7,668** (3.9)	**5,427** (37.6)	**10,235** (174.8)	**15,662** (104.3)	**9,723** (-37.9)	**23,229** (48.3)
	For other uses	**9,056** (-12.4)	**4,872** (13.8)	**4,791** (0.4)	**9,662** (6.7)	**4,345** (-10.8)	**4,559** (-4.8)	**8,904** (-7.9)	**8,477** (-4.8)	**8,421** (-5.4)
	Total	**195,122** (-3.0)	**92,031** (2.4)	**103,917** (-1.3)	**195,948** (0.4)	**88,605** (-3.7)	**107,174** (3.1)	**195,779** (-0.1)	**188,199** (-3.9)	**199,380** (1.8)
LPG sales (1,000 tons)		**16,419** (-5.5)	**7,616** (-1.0)	**8,830** (1.2)	**16,446** (0.2)	**6,976** (-8.4)	**8,576** (-2.9)	**15,553** (-5.4)	**15,836** (1.8)	**15,702** (1.0)

Sources: Actual results data prepared from METI, “Monthly Resources and Energy Statistics” Petroleum Association of Japan, “Monthly Oil Statistics,” and Japan LP Gas Association, “LP Gas Receipt and Delivery Monthly Report;” forecast by IEEJ

Note: Bracketed figures indicate year-to-year percentage changes.

Table 7 Outlook on Domestic Primary Energy Supply

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)	
		(Actual)	1H	2H	Total	1H	2H	Total	Without restriction	With restriction
Domestic primary energy supply (10^10kcal)	Coal	**107,939** (-7.8)	**60,457** (20.1)	**59,760** (3.8)	**120,217** (11.4)	**58,532** (-3.2)	**60,660** (1.5)	**119,192** (-0.9)	**117,106** (-1.8)	**124,083** (4.1)
	Oil	**209,848** (-6.1)	**99,689** (2.5)	**112,590** (0.0)	**212,279** (1.2)	**96,239** (-3.5)	**119,750** (6.4)	**215,989** (1.7)	**204,938** (-5.1)	**226,089** (4.7)
	Natural gas	**90,259** (-2.6)	**45,888** (8.6)	**49,618** (3.4)	**95,506** (5.8)	**51,699** (12.7)	**61,927** (24.8)	**113,626** (19.0)	**104,677** (-7.9)	**121,522** (6.9)
	Hydroelectricity	**16,964** (1.0)	**10,824** (12.1)	**6,561** (-10.3)	**17,385** (2.5)	**10,515** (-2.9)	**6,388** (-2.6)	**16,904** (-2.8)	**16,058** (-5.0)	**16,058** (-5.0)
	Nuclear	**58,876** (8.4)	**30,245** (7.1)	**30,415** (-0.7)	**60,660** (3.0)	**15,796** (-47.8)	**5,751** (-81.1)	**21,547** (-64.5)	**49,161** (128.2)	**28** (-99.9)
	Others	**7,429** (-2.9)	**3,747** (7.9)	**3,958** (0.0)	**7,705** (3.7)	**3,528** (-5.9)	**4,084** (3.2)	**7,611** (-1.2)	**8,124** (6.7)	**8,044** (5.7)
	Total	**491,315** (-4.0)	**250,850** (8.5)	**262,902** (1.1)	**513,752** (4.6)	**236,308** (-5.8)	**258,561** (-1.7)	**494,869** (-3.7)	**500,063** (1.0)	**495,824** (0.2)
Real GDP (Chained to Year 2005, in billion yen)		**495,417** (-2.1)	**252,961** (4.9)	**258,031** (1.5)	**510,992** (3.1)	**249,895** (-1.2)	**259,335** (0.5)	**509,230** (-0.3)	**519,012** (1.9)	**509,957** (0.1)
Energy intensity (primary energy supply/GDP (100 for FY2000)		**93.7** (-2.0)			**95.0** (1.4)			**91.8** (-3.3)	**91.1** (-0.9)	**91.9** (0.1)
CO_2 emissions (energy-based)		**1,075** (-5.5)			**1,122** (4.3)			**1,146** (2.1)	**1,086** (-5.3)	**1,209** (5.5)
(milion t.-C)										
(100 for FY1990)		**101.5**			**105.9**			**108.2**	**102.5**	**114.1**

Sources: Actual results data prepared from IEEJ and Department of the Environment databases, and Cabinet Office's "Preliminary National Income Statistics;" Forecasts by IEEJ

Note:

1. Bracketed figures indicate year-to-year percentage changes.
2. "Others" include geothermal energy, new energies, etc.

Table 8 Outlook on Final Energy Consumption

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)	
		(Actual)	1H	2H	Total	1H	2H	Total	Without restriction	With restriction
By sector (10^10kcal)	Industrial	**155,327** (-3.2)	**78,625** (8.3)	**82,480** (-0.3)	**161,105** (3.7)	**75,375** (-4.1)	**80,816** (-2.0)	**156,191** (-3.1)	**160,339** (2.7)	**157,168** (0.6)
	Residential/commercial	**92,901** (-1.7)	**43,574** (9.0)	**54,468** (2.9)	**98,042** (5.5)	**39,658** (-9.0)	**52,319** (-3.9)	**91,976** (-6.2)	**92,309** (0.4)	**91,854** (-0.1)
	Residential	**51,552** (-0.8)	**21,890** (9.4)	**32,574** (3.3)	**54,464** (5.6)	**20,162** (-7.9)	**31,469** (-3.4)	**51,632** (-5.2)	**51,364** (-0.5)	**51,153** (-0.9)
	Commercial	**41,349** (-2.7)	**21,684** (8.5)	**21,894** (2.5)	**43,578** (5.4)	**19,496** (-10.1)	**20,849** (-4.8)	**40,345** (-7.4)	**40,944** (1.5)	**40,701** (0.9)
	Transportation	**82,815** (-1.7)	**42,614** (3.3)	**40,977** (-1.4)	**83,591** (0.9)	**40,435** (-5.1)	**40,739** (-0.6)	**81,174** (-2.9)	**80,247** (-1.1)	**79,712** (-1.8)
By energy source (10^10kcal)	Coal, etc.	**34,418** (-4.6)	**18,294** (15.0)	**18,042** (-2.5)	**36,336** (5.6)	**17,496** (-4.4)	**17,629** (-2.3)	**35,125** (-3.3)	**36,013** (2.5)	**35,557** (1.2)
	Oil	**177,180** (-1.7)	**83,232** (2.9)	**95,148** (-1.2)	**178,380** (0.7)	**78,171** (-6.1)	**92,285** (-3.0)	**170,456** (-4.4)	**169,543** (-0.5)	**167,509** (-1.7)
	Town gas	**32,472** (-0.6)	**16,202** (12.2)	**18,598** (3.1)	**34,800** (7.2)	**16,158** (-0.3)	**18,956** (1.9)	**35,114** (0.9)	**36,114** (2.8)	**35,590** (1.4)
	Electricity	**83,554** (-3.4)	**45,282** (10.3)	**44,276** (4.2)	**89,558** (7.2)	**41,920** (-7.4)	**43,113** (-2.6)	**85,033** (-5.1)	**87,492** (2.9)	**86,408** (1.6)
	Others	**3,419** (-7.8)	**1,803** (14.3)	**1,861** (1.1)	**3,664** (7.2)	**1,722** (-4.5)	**1,892** (1.7)	**3,614** (-1.4)	**3,732** (3.3)	**3,669** (1.5)
	Total	**331,043** (-2.4)	**164,813** (7.1)	**177,925** (0.4)	**342,738** (3.5)	**155,468** (-5.7)	**173,874** (-2.3)	**329,342** (-3.9)	**332,895** (1.1)	**328,734** (-0.2)
Real GDP (Chained to Year 2005, in billion yen)		**495,417** (-2.1)	**252,961** (4.9)	**258,031** (1.5)	**510,992** (3.1)	**249,895** (-1.2)	**259,335** (0.5)	**509,230** (-0.3)	**519,012** (1.9)	**509,957** (0.1)
Industrial production index (100 for 2005)		**86.1** (-8.8)	**94.6** (17.4)	**93.1** (1.7)	**93.9** (9.1)	**90.3** (-4.5)	**94.2** (1.2)	**92.3** (-1.7)	**96.9** (5.0)	**93.8** (1.6)
Heating deree days		**952** (6.1)	**77** (122.4)	**998** (8.8)	**1,075** (12.9)	**53** (-31.1)	**946** (-5.2)	**999** (-7.1)	**980** (-1.9)	**980** (-1.9)
Cooling degree days		**329** (-17.5)	**560** (70.6)	**0** (-75.0)	**560** (70.5)	**472** (-15.7)	**2** (1600.0)	**474** (-15.4)	**425** (-10.4)	**425** (-10.4)

Sources: Actual results data prepared form IEEJ database and others; forecasts by IEEJ.

Note:

1. Bracketed figures indicate year-to-year percentage changes.
2. Industrial sector consumption includes non-energy uses.

Table 9 Outlook on Electricity Mix (for utilities)

		FY2009	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)	
		(Actual)	1H	2H	Total	1H	2H	Total	Without restriction	With restriction
Input (10^10kcal)	Fossil thermal	**118,076** (-9.6)	**62,064** (9.7)	**62,909** (2.3)	**124,973** (5.8)	**69,051** (11.3)	**85,951** (36.6)	**155,002** (24.0)	**131,797** (-15.0)	**180,142** (16.2)
	Coal	**48,073** (-5.1)	**24,678** (10.1)	**25,181** (-1.8)	**49,859** (3.7)	**23,694** (-4.0)	**26,087** (3.6)	**49,781** (-0.2)	**46,181** (-7.2)	**53,930** (8.3)
	Oil, etc.	**14,849** (-39.8)	**8,923** (20.3)	**8,439** (13.5)	**17,362** (16.9)	**11,191** (25.4)	**18,828** (123.1)	**30,019** (72.9)	**20,522** (-31.6)	**43,729** (45.7)
	Crude oil	**3,462** (-53.9)	**2,436** (53.4)	**2,054** (9.6)	**4,490** (29.7)	**3,133** (28.6)	**6,129** (198.4)	**9,261** (106.3)	**5,594** (-39.6)	**15,583** (68.3)
	Fuel oil C	**7,198** (-42.4)	**3,970** (1.2)	**3,824** (16.8)	**7,794** (8.3)	**5,328** (34.2)	**10,150** (165.4)	**15,478** (98.6)	**9,651** (-37.6)	**22,869** (47.8)
	Natural gas	**55,154** (-0.4)	**28,463** (6.4)	**29,289** (3.1)	**57,752** (4.7)	**34,166** (20.0)	**41,036** (40.1)	**75,202** (30.2)	**65,094** (-13.4)	**82,483** (9.7)
	Hydro	**15,355** (1.0)	**9,878** (12.3)	**5,843** (-10.9)	**15,721** (2.4)	**9,599** (-2.8)	**5,689** (-2.6)	**15,288** (-2.8)	**14,514** (-5.1)	**14,514** (-5.1)
	Nuclear	**58,876** (8.4)	**30,245** (7.1)	**30,415** (-0.7)	**60,660** (3.0)	**15,796** (-47.8)	**5,751** (-81.1)	**21,547** (-64.5)	**49,161** (128.2)	**28** (-99.9)
	Others	**1,143** (2.5)	**537** (-7.4)	**534** (-5.2)	**1,071** (-6.3)	**574** (6.9)	**571** (6.9)	**1,145** (6.9)	**1,220** (6.6)	**1,220** (6.6)
	Total	**193,450** (-3.9)	**102,724** (9.1)	**99,701** (0.4)	**202,425** (4.6)	**95,020** (-7.5)	**97,962** (-1.7)	**192,982** (-4.7)	**196,692** (1.9)	**195,904** (1.5)
Electricity generation (10^10kcal)		**79,144** (-3.1)	**41,776** (8.8)	**41,425** (1.7)	**83,201** (5.1)	**38,319** (-8.3)	**39,901** (-3.7)	**78,219** (-6.0)	**80,581** (3.0)	**79,512** (1.7)

Source: Both actual results and forecasts are from the IEEJ.

Note: Bracketed figures indicate changes from year-before levels.

Table 10 Trade Balance

	FY2010 (Actual)	FY2011 (Forecast)	FY2012 (Forecast)	
			Without electricity restriction	With electricity restriction
Exports (in billions of yen)	67,792	67,093	70,529	64,517
Imports (in billions of yen)	62,413	68,479	68,871	69,263
Fossil fuel imports	16,439	20,648	19,079	21,059
Net exports (in billions of yen)	5,379	-1,386	1,658	-4,746

Table 11 Power Generation Fuel Cut Accompanying 1% Consumption Reduction

	Fuel demand cut
Coal (in 1,000 tons of steaming coal)	3,160
Oil (in 1,000 kiloliters of crude oil)	2,160
Natural gas (in 1,000 tons of LNG)	1,487

Note: In this case, electricity consumption is cut by 1% on an annual basis.
The demand cut for each fuel covers all power generation reduction.

Table 12 Impacts of Ambient Temperature Changes (Case A without electricity restriction)

	Summer (July-September) temperature: up 1℃			Winter (January-March) temperature: down 1℃		
	Demand change	Percentage change		Demand change	Percentage change	
		Qtr.-to-qtr.	Yr.-to-yr.		Qtr.-to-qtr.	Yr.-to-yr.
Domestic primary energy supply (10^10kcal)	**1,535**	(1.2)	(0.3)	**1,450**	(1.1)	(0.3)
Final energy consumption (10^10kcal)	**676**	(0.8)	(0.2)	**976**	(1.1)	(0.3)
Industrial sector	**71**	(0.2)	(0.0)	**185**	(0.5)	(0.1)
Residential sector	**101**	(1.1)	(0.2)	**546**	(2.9)	(1.1)
Commercial sector	**328**	(3.0)	(0.8)	**246**	(2.2)	(0.6)
Transportation sector	**176**	(0.8)	(0.2)	**-**	(0.0)	(0.0)
Electricity sales (million kWh)	**5,769**	(2.4)	(0.6)	**3,308**	(1.4)	(0.4)
Town gas sales (million m^3/10,000kcal)	**57**	(0.7)	(0.2)	**232**	(2.1)	(0.6)
Fuel oil sales (1,000kl)	**621**	(1.4)	(0.3)	**632**	(1.3)	(0.3)
LPG sales (1,000t)	**-57**	(-1.6)	(-0.4)	**102**	(2.3)	(0.6)
CO2 emissions（milion tons）	**4**	(1.6)	(0.4)	**4**	(1.4)	(0.3)

Note: The industrial sector consumption includes non-energy uses.

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